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INDIANA UNIVERSITY BULLETIN



GRADUATE SCHOOL 1911

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University Calendar

SUMMER TERM, 1911

<i>June 22, Thursday.</i>	Registration and enrollment for the Summer term.
<i>June 23, Friday.</i>	Recitations and lectures begin for the First half-term. (Instruction five days a week.)
<i>Aug. 1, Tuesday.</i>	First half-term ends.
<i>Aug. 2, Wednesday.</i>	Recitations and lectures begin for Second half-term. (Instruction six days a week.)
<i>Sept. 1, Friday.</i>	Summer term ends.

FALL TERM, 1911-12

<i>Sept. 21, Thursday.</i>	Registration and enrollment in classes for the Fall term.
<i>Sept. 22, Friday.</i>	Recitations and lectures begin.
<i>Nov. 23 and 24, Thursday and Friday.</i>	Thanksgiving recess.
<i>Dec. 15, Friday.</i>	Fall term ends.

WINTER TERM, 1911-12

<i>Jan. 2, Tuesday.</i>	Registration and enrollment in classes for the Winter term.
<i>Jan. 3, Wednesday.</i>	Recitations and lectures begin.
<i>Jan. 20, Saturday.</i>	Foundation day.
<i>Feb. 22, Thursday.</i>	Washington's birthday, a holiday.
<i>Mar. 22, Friday.</i>	Winter term ends.

SPRING TERM, 1911-12

<i>April 2, Tuesday.</i>	Registration and enrollment in classes for the Spring term.
<i>April 3, Wednesday.</i>	Recitations and lectures begin.
<i>June 18, Tuesday.</i>	Spring term ends.
<i>June 19, Wednesday.</i>	University Commencement.

INDIANA UNIVERSITY BULLETIN

VOL. IX

BLOOMINGTON, IND., APRIL 1, 1911

NO. I

Entered as second-class matter May 16, 1908, at the postoffice at Bloomington, Indiana, under the Act of July 16, 1894. Published from the University office, Bloomington, Indiana, semi-monthly April, May, and June, and monthly January, February, March, July, September, and November.

Prefatory Note

THE Indiana University, situated at Bloomington, Indiana, is the State University of Indiana and the head of the public school system of the State. It takes its origin from the State Seminary, which was established by act of the Legislature, approved January 20, 1820. In 1828 the title of the Seminary was changed by the Legislature to that of the Indiana College; and in 1838 the University was given its present name and style. In 1867 Indiana University became coeducational.

The University consists at present of—

- The College of Liberal Arts, organized in 1828,
- The School of Law, organized in 1842, re-organized in 1889,
- The School of Medicine, organized in 1903,
- The Graduate School, organized in 1904,
- The School of Education, organized in 1908.

The first advanced degrees, conferred for graduate work, were granted in 1882. During the eighties, well defined regulations for graduate work and graduate degrees were stated in the University catalogue, and a considerable number of graduate students were enrolled, especially in the natural sciences. In the years 1882 to 1893, inclusive, the University graduated 14 Doctors of Philosophy, 99 Masters of Arts, and 12 Masters of Science. For some years following 1893, however, the degree of Doctor of Philosophy was not conferred.

In 1904 there took place a segregation and formal organization of the Graduate School, and in 1908 the office of Dean of the Graduate School was created.

This number of the Bulletin is devoted to setting forth the facilities for graduate work in the several Departments of the University. Courses intended primarily for graduate students in the subject under consideration are described in full. Only skeleton announcements are given of courses intended for both graduates and undergraduates. For further description of the latter courses, see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue.

The attention of graduates of other Indiana colleges is invited to the announcement on a subsequent page of ten fellowships, recently established by the Board of Trustees, for such students. The value of these fellowships is \$200 each; they also carry with them exemption from Contingent and Library fees. For further information concerning the Graduate School, address,

THE DEAN OF THE GRADUATE SCHOOL,
Bloomington, Indiana.

Officers and Faculty of the Graduate School

COUNCIL

CARL H EIGENMANN, Ph.D., Professor of Zoölogy, Dean of the Graduate School.

JAMES ALBERT WOODBURN, Ph.D., Professor of American History and Politics.

HAROLD WHETSTONE JOHNSTON, Ph.D., L.H.D., LL.D., Professor of Latin.

ROBERT EDWARD LYONS, Ph.D., Professor of Chemistry.

ARTHUR LEE FOLEY, Ph.D., Professor of Physics.

ALBERT FREDERICK KUERSTEINER, Ph.D., Professor of Romance Languages.

ULYSES GRANT WEATHERLY, Ph.D., Litt.D., Professor of Economics and Social Science.

ERNEST HIRAM LINDLEY, Ph.D., Professor of Philosophy and Psychology.

BURTON DORR MYERS, A.M., M.D., Professor of Anatomy.

BERT JOHN VOS, Ph.D., Professor of German.

EDGAR ROSCOE CUMINGS, Ph.D., Professor of Geology.

ELMER ELLSWORTH JONES, Ph.D., Professor of the History and Philosophy of Education.

CHARLES JACOB SEMBOWER, Ph.D., Professor of English.

FACULTY

WILLIAM LOWE BRYAN, Ph.D., LL.D., President of the University.

HORACE ADDISON HOFFMAN, A.M., Professor of Greek.

JAMES ALBERT WOODBURN, Ph.D., LL.D., Professor of American History and Politics.

CARL H EIGENMANN, Ph.D., Professor of Zoölogy, and Director of the Biological Station.

HAROLD WHETSTONE JOHNSTON, Ph.D., L.H.D., LL.D., Professor of Latin.

ROBERT EDWARD LYONS, Ph.D., Professor of Chemistry.

ARTHUR LEE FOLEY, Ph.D., Professor of Physics.

DAVID MYERS MOTTIER, Ph.D., Professor of Botany.

ALBERT FREDERICK KUERSTEINER, Ph.D., Professor of Romance Languages.

ULYSSES GRANT WEATHERLY, Ph.D., Litt.D., Professor of Economics and Social Science.

ERNEST HIRAM LINDLEY, Ph.D., Professor of Philosophy and Psychology.

BURTON DORR MYERS, A.M., M.D., Professor of Anatomy.

SAMUEL BANNISTER HARDING, Ph.D., Professor of European History.

AMOS SHARTLE HERSHHEY, Ph.D., Professor of Political Science and International Law.

BERT JOHN VOS, Ph.D., Professor of German.

- WILLIAM A RAWLES, Ph.D., Professor of Political Economy.
CARL WILHELM FERDINAND OSTHAUS, A.M., Professor of German.
SCHUYLER COLFAX DAVISSON, Sc.D., Professor of Mathematics.
DAVID ANDREW ROTHROCK, Ph.D., Professor of Mathematics.
WILLIAM J MOENKHAUS, Ph.D., Professor of Physiology.
LOUIS SHERMAN DAVIS, Ph. D., Professor of Chemistry.
WARNER FITE, Ph.D., Professor of Philosophy.
WILL DAVID HOWE, Ph.D., Professor of English.
†ERNEST OTTO HOLLAND, A.B., Professor of Secondary Education.
AUGUSTUS GROTE POHLMAN, M.D., Professor of Anatomy.
HENRY RIHL ALBURGER, M.D., Professor of Pathology.
WILLIAM WESLEY BLACK, A.M., Professor of Elementary Education.
ELMER ELLSWORTH JONES, Ph.D., Professor of the History and Philosophy
of Education.
CHARLES JACOB SEMBOWER, Ph.D., Professor of English.
EDGAR ROSCOE CUMINGS, Ph.D., Professor of Geology.
WALTER ALBERT JESSUP, A.M., Professor of School Administration.
GEORGE DAVIS MORRIS, A.M., Associate Professor of French.
FRANK WILLIAM TILDEN, A.M., Associate Professor of Greek.
*GUIDO HERMAN STEMPLE, A.M., Associate Professor of Comparative Phi-
lology.
CHARLES ALFRED MOSE MILLER, A.B., Associate Professor of Romance Lan-
guages.
ROLLA ROY RAMSEY, Ph.D., Associate Professor of Physics.
OLIVER W BROWN, A.M., Associate Professor of Chemistry.
FRANK MARION ANDREWS, Ph.D., Associate Professor of Botany.
LILLIAN GAY BERRY, A.M., Associate Professor of Latin.
HENRY THIEW STEPHENSON, B.S., A.B., Associate Professor of English.
FRANK AYDELOTTE, A.M., B.Litt., Associate Professor of English.
WILBUR ADELMAN COGSHALL, A.M., Associate Professor of Astronomy.
ULYSSES SHERMAN HANNA, Ph.D., Associate Professor of Mathematics.
JOSHUA WILLIAM BEEDE, Ph.D., Associate Professor of Geology.
EUGENE LESER, Ph.D., Assistant Professor of German.
JAMES M VAN HOOK, A.M., Assistant Professor of Botany.
FRANK CURRY MATHERS, Ph.D., Assistant Professor of Chemistry.
CLARENCE EARL MAY, Ph.D., Assistant Professor of Chemistry.
MELVIN EVERETT HAGGERTY, Ph.D., Assistant Professor of Philosophy, and
Director of the Psychological Laboratory.
FERNANDUS PAYNE, Ph.D., Assistant Professor of Zoölogy.
RICHARD ASHLEY RICE, A.M., Acting Assistant Professor of English.
ROBERT DANIEL CARMICHAEL, Ph.D., Assistant Professor of Mathematics

†Absent on leave.

*Absent on leave until August, 1912.

General Statement of the Graduate School

Purpose and Administration. The Graduate School furnishes opportunities for advanced work leading to careers in higher education and in certain lines of investigation. It does not offer work leading to professional degrees in Law or in Medicine.

The work of the School is a direct continuation of that of the College of Liberal Arts, and as such is the most advanced work in education undertaken by the State. The Graduate School stands, therefore, at the head of the University, and is the culmination of the public school system of the State.

The school is administered by the Council of the Graduate School. It is composed of members of the Faculty representing different fields of learning.

Not all Departments of the University are at present equally equipped for extended graduate work. In recognition of this fact, the amount and nature of the graduate work offered by the different Departments varies. Some Departments offer work for the A.M. degree only, while others offer work leading to the degree of Ph.D.

Admission. Students holding a bachelor's degree in Arts or Science from Indiana University, or the same degree or its equivalent from institutions of equal rank, are admitted to the Graduate School on presentation of the proper credentials. Persons holding the bachelor's degree from institutions whose requirements are considered to lack a year or more of being the equivalent of the A.B. from this institution, are not admitted to the Graduate School. They may enter the College of Liberal Arts and are referred to the Dean of the College for their standing. Holders of the A.B. or its equivalent from institutions whose requirements lack less than a year of being the equivalent of the A.B. from this institution, may be admitted to the Graduate School. In such cases, work in addition to the minimum of forty-five hours for the A.M. degree will be demanded. The amount will be determined in each case by the Council of the Graduate School.

All graduate students will enroll at the beginning of each term, and those entering regularly organized classes will submit

to the same regulations as undergraduate students. Work will in many cases be individual and not controlled by a recitation schedule. At the time of entrance to the Graduate School the student must submit a plan of the entire work he wishes to present for the master's or doctor's degree. This plan must be approved by the professor of the major subject and the Dean of the Graduate School.

Fees. Students who are legal residents of the State of Indiana are charged a Contingent fee of five dollars a term, and a Library fee of one dollar a term.

These fees cover in part the cost of the physical maintenance of the University, and are not applied to the cost of tuition, which is provided wholly by the State.

Students not legal residents of the State of Indiana will be charged a Contingent and Library fee amounting to twenty dollars a term. For each Summer half-term, half the fee will be charged. This fee is in lieu of the regular Library and Contingent fees noted above.

The Laboratory fees in all courses are uniformly one dollar per credit hour.

The Gymnasium fee, if the work in physical training is taken, is one dollar a term.

An Examination fee of one dollar is charged for each make-up or special examination. This fee is paid to the Bursar, and his receipt when presented to the proper instructor constitutes his authorization for holding the examination.

The fee for any Degree is five dollars, and must be paid to the Bursar at least thirty days before graduation.

The Library. The Library of Indiana University at present contains eighty thousand catalogued volumes. The selection of these books has been made by experts within the last twenty-five years with a view to facilitating instruction and research. The collection is a well-balanced one, and is especially strong in literary and scientific periodicals. The list of periodicals received and permanently kept on file by the library numbers about four hundred, and includes American, English, German, French, and, to a less extent, Italian, Spanish, and Swedish publications. The library is made thoroughly usable by a carefully prepared card catalogues, by indexes, and other bibliographical aids. The Library force consists of a librarian and twelve assistants, all of whom are at the service of any authorized user of the library.

In the library building are seminary rooms for the Departments of History, Economics, English, Philosophy, German, Romance Languages, Education, Latin, and Greek.

In addition to the central library, where the general, literary, and historical collections are housed, there are nine departmental collections, of varying sizes, kept in the different University buildings.

All books, with the exception of periodicals and books reserved for reference, may be drawn for home use. Each undergraduate student may draw two books for two weeks, with privilege of renewal, and each graduate student may draw five books for two weeks, with privilege of renewal.

The Library is open Mondays to Fridays from 7:45 a.m. to 10:00 p.m., and Saturdays from 8:00 a.m. to 5:00 p.m.

DEGREES

Three advanced degrees, Master of Science, Master of Arts, and Doctor of Philosophy, are conferred by the University.

Master of Arts. The degree of Master of Arts may be conferred upon Bachelors of Arts of this University, or of any other institution of equivalent standing, following a residence at the University of a minimum of three full terms and the completion of a minimum of forty-five hours of University credit.

Less than a full term in residence will not be counted toward satisfying the residence requirements for the A.M. degree. There is no restriction as to the amount of work that may be carried during any term.

Credits earned in excess of those required for the A.B. or B.S. degrees, before the degree is conferred or a certificate of the completion of the work for the degree is issued, are not counted toward the A.M. degree.

Thirty of the total of forty-five hours required for the degree A.M. must be in one Department, or in closely allied Departments. Fifteen hours must be distinctly graduate in character.

Graduates of this University may be given leave of absence for one term of the required year to pursue a specific investigation.

The work for the A.M. degree may all be done in Summer terms, with the reservation that the student must be in residence during three out of four successive Summer terms. Single half-terms will not be counted toward the residence requirement.

Professional studies are not accepted for the graduate degrees, but research work on professional subjects may be accepted at the option of the professor in charge of the major subject.

A thesis is required in all Departments except that of Latin.

Master of Science. The degree of Master of Science may be conferred upon Bachelors of Science of Indiana University under the same conditions upon which the degree Master of Arts is conferred on Bachelors of Arts.

Doctor of Philosophy. The degree of Doctor of Philosophy may be conferred upon graduates of this University, or of any institution of similar character and rank, upon the completion of an advanced course of study of not less than three years.

Each candidate for this degree will select a major subject consisting of the work of some one Department or recognized subdivision of a Department; and not less than two minors, at least one of which must be in some Department related to, but distinct from, that of the major subject.

The course for the degree will be pursued under the direction of a committee consisting of the heads of the Departments in which the work is done. Its value will be determined by a final examination, and by the presentation of a satisfactory thesis, usually embodying original work upon some prescribed or accepted subject, and which must always give evidence that the candidate is capable of forming an independent judgment upon the recent literature of his Department.

A detailed statement of the work offered for the degree, indorsed by the professor in charge of the major subject, must be submitted to the Council of the Graduate School, not later than May 10 of the year in which the candidate presents himself for examination.

On the recommendation of the professor in charge of the major subject, and with the concurrence of the Council of the Graduate School, part of the three years' study required for this degree may be spent in residence at other universities.

The thesis of every candidate for the degree of Doctor of Philosophy shall be presented to the Council of the Graduate School on or before the first day of June of the year in which he proposes to take the degree. The thesis must be indorsed by the head of the Department as being in its final form, and ready for the press. If the candidate is recommended for the degree, arrangements must be made to deposit five printed copies of the thesis in the library.

Examinations of each candidate for this degree will be conducted by a committee consisting of all the instructors under whom graduate work has been taken, in the presence of such members of the Faculty of the school as care to attend.

At least one year before the final examination the candidate shall satisfy the professor in charge of the major subject of his ability to use French and German for purposes of investigation.

Application for Degrees. Application for advanced degrees must be filed with the Dean, at the time of admission to the Graduate School. Application for the degree Doctor of Philosophy must be on file at least one year before the candidate is admitted to the examination.

FELLOWSHIPS

Teaching Fellowships. A number of teaching fellowships are available for graduate students.

The Teaching Fellows are relieved from all term fees, and the fellowship carries with it an honorarium of between \$200 and \$500 annually. The highest amount will ordinarily be paid only if the incumbent is appointed for a third year. A Teaching Fellowship is primarily a recognition of scholarship. Not less than two-thirds of each Fellow's time must be devoted to work leading to the Doctorate in Philosophy; but he will be required also to give a portion of his time to the service of the Department in which he is appointed.

A Fellow may be appointed for three separate years, but not for more. Appointments are for one year, and do not necessarily imply a reappointment.

The following are Teaching Fellows during the year 1910-11:

- CLAUDE LEIGH CLAWSON, A.B., Teaching Fellow in Mathematics.
- CORA MAY DOELEMAN, A.B., Teaching Fellow in German.
- MARION DURBIN ELLIS, A.M., Teaching Fellow in Zoölogy.
- MAX MAPES ELLIS, A.M., Teaching Fellow in Zoölogy.
- LOGAN ESAREY, A.M., Research Fellow in History.
- ERNEST CLYDE FISHBAUGH, A.B., Teaching Fellow in Pathology.
- JESSE JAMES GALLOWAY, A.B., Teaching Fellow in Geology.
- MARY THERESA HARMAN, A.B., Teaching Fellow in Zoölogy.
- JOHN PARDEE KING, A.B., Teaching Fellow in Philosophy.
- JULIAN JACOB KISFR, A.B., Teaching Fellow in Public Speaking.
- IRVING STODDARD KULL, A.B., Teaching Fellow in History.
- IRA ELVER LEE, Teaching Fellow in Chemistry.
- GERTRUDE IONE MCCAIN, A.B., Teaching Fellow in Mathematics.

EDWARD DAVID McDONALD, A.B., Teaching Fellow in English.
JOHN NATHAN MARTIN, A.B., Teaching Fellow in Botany.
EMERY WATKINS MONTGOMERY, A.B., Teaching Fellow in History.
ALPHEUS RUSSELL NEES, A.B., Teaching Fellow in Chemistry.
OLIVER RALPH OVERMAN, A.B., Teaching Fellow in Chemistry.
CHARLES ELMER OWENS, A.B., Teaching Fellow in Botany.
DARMON ARTELLE RIINEHART, A.B., Teaching Fellow in Anatomy.
WILMER HENRY SOUDER, A.B., Teaching Fellow in Physics.
CLAUDE EARL SUTTON, A.B., Teaching Fellow in Botany.
CHARLES A UNNEWEHRE, A.B., Teaching Fellow in Physics.
THURMAN WILLIAM VAN METRE, A.B., Teaching Fellow in Economics.
JOSEPH ABRAHAM WILLIAMS, A.M., Teaching Fellow in Philosophy.

Donaldson Fellowship in Zoölogy. The Donaldson Fellowship in Zoölogy, of the value of \$500, is open to students who are in large measure capable of doing independent work in biological subjects. The fellowship implies residence for twelve months at the cave farm of the University, at Mitchell, Indiana. A certain amount of supervising work is required of the incumbent.

Lawrence Fellowship in Astronomy. The Lawrence Fellowship of the Department of Mechanics and Astronomy has been established by Mr. Percival Lowell, of the Lowell Observatory, upon the following terms and conditions:

1. The fellowship shall be known as the Lawrence Fellowship, in remembrance of the donor's mother, and is established in perpetuity, revocable, however, at any time at the will of the founder.
2. It shall be annually available and shall cover the college calendar year, that is, from commencement to commencement of the same.
3. The applicant shall be appointed by the Department, the donor reserving the right of final passing upon the suitability of the candidate so presented.
4. The Fellow shall be given time and opportunity for an original thesis on some astronomical subject looking to the taking of a Master's degree, the nature of which shall be decided by the Director and the Fellow. But the Fellow shall be expected to give general assistance in the observatory's work during the period of his fellowship.

5. The Fellowship will pay \$600 and the Fellow's traveling expenses to and from the Observatory at Flagstaff, Ariz.; and a furnished room at the Observatory shall be free to the Fellow's use.

Fellowships for Graduates of Other Indiana Colleges. The Trustees of Indiana University, at their March meeting, 1910, established ten Graduate Fellowships of an annual value of \$200 each, with exemption from term fees, to be held by graduates of other colleges in the State. In awarding these fellowships the policy will be to assign them to the most promising students, irrespective of the special field of study in which they wish to work or the particular institutions from which they come. As between cases of equal merit, however, attention will be given to securing a distribution of the awards among different departments of study and different colleges of the State.

Applicants for these fellowships should file a full statement of their educational history and plans with the Dean of the Graduate School. This should contain a statement of the major subject which they wish to pursue, and be accompanied by a transcript of their college record, and such recommendations from their instructors and other evidences of fitness as they can offer. Applications will be received up to April 15 of each year.

The applications will be referred in each case to the Department of the major subject in Indiana University, which will decide upon the respective merits of the applicants in that Department. On the basis of the departmental reports, the Graduate Council will recommend to the Trustees the most eligible candidates for appointment.

These fellowships are not open to students doing professional work in law or in medicine.

Incumbents will not ordinarily be eligible for reappointment, but they will be eligible for appointment to teaching fellowships.

For application blanks, and further information, address the Dean of the Graduate School.

The following are the Fellows for 1910-11, with the Department in which each is working:

TOMIJIRO KOCHIEconomics.
A.B., University of Waseda, Japan, 1909; Ph.B., Franklin College, 1910.

LESLIE MACDILLMathematics.
A.B., Hanover College, 1909.

HUGH MCHENRY MARBLEChemistry.
A.B., Hanover College, 1910.

Special Rule Concerning Fellows. Holders of fellowships are not permitted, without the special permission of the Graduate Council, to do work for remuneration outside the University.

UNIVERSITY ORGANIZATIONS

The Graduate Club. A graduate club was founded in 1910 to establish closer relations among the graduate students, and between graduate students and the members of the faculty. Through the association of its members at the meetings, and the close acquaintanceships there gained, the club aims to foster a community of spirit and a solidarity of interest. The meetings are in part social, and in part devoted to the presentation of papers by members of the club, giving the results of some investigation carried on by the author. In this way, students in the different Departments are made acquainted with the special advanced work in various lines of research carried on in the University. Occasionally addresses will be given by visitors of educational prominence. Membership in the club is open to all graduate students.

Sigma Xi. Sigma Xi is a somewhat similar organization, especially for scientific students. It is a chapter of a national scientific fraternity, to which members of the Faculty, graduate students, and Seniors may be elected. Its object is to encourage investigation in science, pure and applied.

Phi Beta Kappa. Phi Beta Kappa is a chapter of the oldest Greek-letter fraternity, founded in 1776 for "the promotion of scholarship and friendship among students and graduates of American colleges." It is to-day no longer a secret society, but an honor-society, having for its special aim the encouragement of liberal culture. At Indiana University, a certain number of Seniors, not over ten per cent are elected each year, partly at Thanksgiving and partly at Commencement, and the membership includes also certain members of the Faculty, and a few others chosen directly from the ranks of the alumni. The chapter was established on Foundation Day, 1911.

Departmental Clubs. The following Departments have special departmental clubs: Geology, Zoölogy, Physics, Chemistry, History, Philosophy, English, Mathematics, German, French, Spanish, and Comparative Philology. Membership in these clubs is open to Faculty members of the Department, graduate students, and undergraduates. The purpose of the clubs is to discuss topics of interest to members, and to promote social intercourse.

Departments and Graduate Courses of Instruction, 1911-1912

** In the following list are included many courses which are open alike to graduates and advanced underclassmen. Only a skeleton announcement of these is here made; for full description see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue. Strictly graduate courses are described in full. The more elementary courses are not listed here at all.

DEPARTMENT OF GREEK

HORACE A. HOFFMAN, Professor.

FRANK W. TILDEN, Associate Professor.

The time that at the present may be profitably devoted to graduate work in Greek is one year, leading to the degree of A.M. A thesis on some subject connected with the seminary work of the year is required for the degree.

All candidates for A.M., with Greek as major subject, must take at least fifteen hours in Latin, in advance of the Latin taken in the undergraduate study.

Courses 9, 12, and 13, or any part of these courses, are also open as minors to graduate students who have not already had as part of their undergraduate study the work which they take in their courses for graduate credit.

The Department is well equipped for doing satisfactory work leading to the degree of Master of Arts. Besides the most important reference books, cyclopedias, dictionaries, lexicons, indexes, and standard editions of Greek writers, an effort has been made to build up an especially good collection of works treating of Euripides, since seminary work is generally given in that author. The Department has the chief older editions as well as nearly all of the later ones, and many special works bearing on Euripides.

The Library contains the most important classical journals, among them complete sets of 'The American Journal of Philology'; 'The American Journal of Archaeology'; 'The Classical Review'; Chicago, Cornell, and Harvard 'Studies'; 'Hermes'; 'Jahrbücher für classische Philologie'; 'Mitteilungen d. deutsch. arch. Inst. in Athen'; 'Philologus'; 'Rheinisches Museum'; 'Journal of Hellenic Studies'.

Among the most valuable works in the field of Archaeology and Art the following may be named: 'Antike Denkmäler'; 'Ausgrabungen von Olympia'; 'Carapanos'; 'Dodona'; Hamdrey-Bey and Reinaeh's 'Nécropole à Sidon'; Homolle's 'Fouilles de Delphes'; Ohnefalseh-Richter's 'Cypros, die Bibel und Homer'; Overbeek's 'Griechische Kunstmythologie'; Stackelberg's 'Die Gräber der Hellenen'; Fenger's 'Dorische Polyehromie'; and the publications of the Ameriean and British Schools of Athens, and of the Egyptian Exploration Fund. Among the works on Inscriptions and Epigraphy the following may be mentioned: 'Corpus Inscriptio[n]um Graecar[um]'; 'Corpus Inscriptio[n]um Atticar[um]'; 'Inscr. Graec. Septentrionalis, Italiae, Pelopon., Insularum, etc.'; 'Die Insehriften von Priene', and the important writings of such authorities as Klein, Kretschmer, Meisterhans, etc. For palaeography and the study of the papyri, the following are accessible: Grenfell, Hunt, Kenyon, Mahaffy, Mayser, Mitteis, Thompson and Wilkin. In the important field of vase-painting, the Library contains many valuable works. Among the most noteworthy are: Benndorf's 'Griechische und Sicilische Vasenbilder'; Collignon and Rayet's 'Histoire de la Céramique grecque'; Deehelette's 'Les Vases céramiques ornés de la Gaule romaine'; Furtwängler and Loeschke's 'Mykenische Vasen,' and 'Mykenische Thongefäße'; Furtwängler and Reiehhold's 'Griechische Vasenmalerei'; Harrison and McColl's 'Types of Greek Vases,' and various books by Gardner, Huddilston, Klein, Kretschmer, Murray, Smith and Walters.

The Department also owns upwards of 700 photographs of landscapes, buildings, and works of art in Greece, Italy, and Sicily; and has many lantern-slides, busts, casts, a model of the Acropolis at Athens, and a series of reproductions of the famous Tanagra Figurines.

Following are the courses open to graduate students in the Department. The more elementary courses are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue:

9. Lyric and Dramatic Poetry. Associate Professor TILDEN.
Fall, Winter, and Spring terms, daily, at 9:00.
12. Philosophical Prose. Professor HOFFMAN.
Fall, Winter, and Spring terms, T. Th., at 10:00.
13. Historical and Rhetorical Prose. Associate Professor TILDEN.
Fall, Winter, and Spring terms, M. W. F., at 10:00.

15a. Graduate Seminary. Euripides is the author usually studied, but other authors may be selected. In 1910-11 Plutarch's 'Pericles' was made the basis of the work, and the portions of Thucydides and other authors bearing on the life and policies of Pericles were also studied. Professor HOFFMAN.

Fall, Winter, and Spring terms, W., at hours to be appointed.

15b. Graduate Seminary: Aeschylus. In 1910-11 all the plays and fragments were studied, chiefly with a view to the religious and ethical ideas of Aeschylus. Associate Professor TILDEN.

Fall, Winter, and Spring terms, F., at hours to be appointed.

DEPARTMENT OF LATIN

HAROLD W. JOHNSTON, Professor.

LILLIAN GAY BERRY, Associate Professor.

The graduate courses of the Department are intended to meet the wants of those making the teaching of Latin in schools and colleges their profession, whether or not they are candidates for a degree. The work of the first year (Courses 34 or 33, 41, and 42) consists chiefly of lectures and recitations. After the first year the work is to a great extent individual (Course 50), including, besides wide reading in authors of all periods, the first-hand investigation of some subject selected with the approval of the Department.

In the Summer term courses are offered for both graduates and undergraduates. The work for the A.M. degree may be done in three summers. The undergraduate courses may be counted to satisfy the language requirement for graduation in other departments, or as elective work, but may not be counted for graduation in Latin without the permission of the Department obtained in advance.

If Course 33 is taken in the undergraduate course, Course 34 should be made a part of the graduate work, and *vice versa*.

Following are the courses open to graduate students in the Department. The more elementary courses are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue.

[33. Prose Writers of the Republic. Professor JOHNSTON.

Fall, Winter, and Spring terms, M. W. F., at 9:00.

Courses 33 and 34 are given in alternate years.].

Omitted in 1911-12.

34. Poets of the Republic. Professor JOHNSTON.

Fall, Winter, and Spring terms, M. W. F., at 9:00.

41. Topography and Monuments of Ancient Rome. Recitations, lectures, and assigned readings. Associate Professor BERRY.
 Fall, Winter, and Spring terms, once a week, at an hour to be arranged.
 Platner, 'Ancient Rome.'
 Open to graduate students only.
42. Readings in Latin Literature. The student will be guided and assisted in reading very considerable portions of those authors not included in other courses, with stress laid upon the subject matter rather than upon the language and style. Analysis and summaries will be prepared by the student and criticized by the instructor. Professor JOHNSTON and Associate Professor BERRY.
 Fall, Winter, and Spring terms, once a week, at an hour to be arranged.
 Open to graduate students only.
43. Advanced Composition. This course is intended especially for teachers, but may be taken by any persons who need practice in writing Latin. Professor JOHNSTON and Mr. PRESTON.
 Fall, Winter, and Spring terms, once a week, at an hour to be arranged.
 Open to graduates and teachers of Latin.
50. Seminary. The critical study of the text of some standard author, with incidental investigation of problems in syntax, style, prosody, and so forth. In past years, Caesar, Sallust, Tacitus, and Plautus have been made the subjects of similar work. In 1911-12 it is proposed to make a study of Terence. The student should be provided with the critical edition of Umpfenbach and the text editions of Dzitzko and Fleckeisen. Professor JOHNSTON.
 Fall, Winter, and Spring terms, M., 2:00 to 3:50.
 Open to students who have had one year's graduate work.

DEPARTMENT OF ROMANCE LANGUAGES.

ALBERT F. KUERSTEINER, Professor of Romance Languages.

GEORGE D. MORRIS, Associate Professor of French.

CHARLES A. MOSEMILLER, Associate Professor of Romance Languages.

The Department of Romance Languages offers one year of graduate work, all in French.

The Library is well equipped with works in French criticism, and has a fair selection of works in French literature. It contains all of the volumes of the 'Grands Ecrivains de la France' series published so far, and also the following periodical publications:

Archiv für das Studium der neueren Sprachen und Literaturen.
 Bibliothek des litterarischen Vereins in Stuttgart.
 Euphorion.
 Französische Studien.

- Literaturblatt für germanische und romanische Philologie.
 Modern Language Notes.
 Modern Language Review.
 Modern Philology.
 Publications of the Modern Language Association of America.
 Revue Bleue.
 Revue de Cours et Conférences.
 Revue des deux Mondes.
 Romania.
 Zeitschrift für französische Sprache und Litteratur.
 Zeitschrift für romanesche Philologie.

Following are the courses open to graduate students in the Department. The more elementary courses are not here listed; for those see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue.

- [7. Seventeenth Century Poetry and Drama. Professor KUERSTEINER.
 Fall, Winter, and Spring terms, M. W. F., at 9:00.]
 Omitted in 1911-12.
- 24. Eighteenth Century Poetry and Drama. Professor KUERSTEINER.
 Fall, Winter, and Spring terms, M. W. F., at 9:00.
- 10. Nineteenth Century: The Romantic Period. Associate Professor MORRIS.
 Fall, Winter, and Spring terms, M. W. F., at 10:00.
- [27. Nineteenth Century: The Realistic Period. Associate Professor MORRIS.
 Fall, Winter, and Spring terms, M. W. F., at 10:00.]
 Omitted in 1911-12.
- 32. Contemporary Fiction. Associate Professor MORRIS.
 Fall, Winter, and Spring terms, T. Th., at 10:00.
- [33. Contemporary Drama. Associate Professor MORRIS.
 Fall, Winter, and Spring terms, T. Th., at 10:00.]
 Omitted in 1911-12.
- 25. Advanced Composition. Associate Professor MOSEMILLER.
 Fall, Winter, and Spring terms, T. Th., at 2:00.
- [28. Senior Composition. Associate Professor MOSEMILLER.
 Fall, Winter, and Spring terms, T. Th., at 3:00.]
 Omitted in 1911-12.
- 13. Old French: Reading of texts; study of Old French phonology and morphology; exercises in tracing words from classical and from popular Latin to Modern French; brief survey of Old French literature. Lectures. Professor KUERSTEINER.
 Fall, Winter, and Spring terms, M. W. F., at 11:00.
 Paris, 'Extraits de la Chanson de Roland'; Suchier, 'Aucassin et Nicolette' (French edition); Constans, 'Chrestomathie de l'ancien français'; Paris-Langlois, 'Chrestomathie du moyen-âge'; Paris-Langlois, 'Extraits des Chroniqueurs français'; Paris, 'La littérature française au moyen-âge'.
 Open to students who have studied French and Latin.

DEPARTMENT OF GERMAN

BERT J. VOS, Professor of German.

CARL W. F. OSTHAUS, Professor.

EUGENE LESER, Assistant Professor.

In combination with the Department of Comparative Philology, which gives courses in Gothic, Old High German, and Old Norse, the Department at present offers about thirty-five hours of Graduate work. Students entering upon the graduate study of German must previously have completed the courses required for a major in the Department, or their equivalent. Courses 27 and 29 are, however, open to students of other departments than German upon the completion of the work of the Junior year. The library is well equipped with books for the special study of Classical and Nineteenth Century German literature.

The list of complete sets of periodicals and of current publications received includes the following, those marked with an asterisk representing complete sets:

- Alemannia.
Allgemeine Zeitung. München.
*Archiv für das Studium der neueren Sprachen und Literaturen.
*Archiv für Litteraturgeschichte.
Archiv für nordisk Filologi.
*Beiträge zur Geschichte der deutschen Sprache und Literatur.
*Bibliothek des litterarischen Vereins in Stuttgart.
*Columbia University Germanic Studies.
Das Litterarische Echo.
*Euphorion.
*Forschungen zur neueren Literaturgeschichte, herausgegeben von F. Muncker.
German-American Annals.
*Germanisch-Romanische Monatsschrift.
*Goethe Jahrbuch.
*Indogermanische Forschungen.
*Jahrbuch des freien deutschen Hochstifts.
*Jahrbuch der Grillparzer Gesellschaft.
Jahrbuch des Vereins für niederdeutsche Sprachforschung.
*Jahresbericht über die Erscheinungen auf dem Gebiete der Germanischen Philologie.
*Jahresberichte für neuere deutsche Litteraturgeschichte.
*Journal of English and Germanic Philology.
Korrespondenzblatt des Vereins für niederdeutsche Sprachforschung.
*Literaturblatt für germanische und romanische Philologie.
*Modern Language Notes.
*Modern Language Review.

*Modern Philology.

*Monatshefte für deutsche Sprache und Pädagogik.

*Publications of the Modern Language Association of America.

*Quellen und Forschungen.

*Veröffentlichungen des Schwäbischen Schiller Vereins.

*Vierteljahrsschrift für Litteraturgeschichte.

Zeitschrift des Allgemeinen deutschen Sprachvereins.

*Zeitschrift des Vereins für Volkskunde.

Zeitschrift für Bücherfreunde.

*Zeitschrift für deutsches Altertum.

Zeitschrift für den deutschen Unterricht.

Zeitschrift für deutsche Mundarten.

*Zeitschrift für deutsche Philologie.

*Zeitschrift für deutsche Wortforschung.

Zeitschrift für die österreichischen Gymnasien.

*Zeitschrift für vergleichende Litteraturgeschichte.

For Gothic and Old High German, see Courses 4 and 9 of the Department of Comparative Philology.

Following are the courses open to graduate students in the Department. The more elementary courses are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue:

14. German Usage. Assistant Professor LESER.
Winter and Spring terms, T. Th., at an hour to be appointed.
30. Studies in the recent German Drama. Professor OSTHAUS.
Fall term, M. W. F., at an hour to be appointed.
28. Journal Club. This course is introductory to the work of the German Seminary. Members make reports upon the contents of current numbers of journals devoted to German literature and philology, and are trained in the use of important works of reference. Two to five hours' credit. Professor Vos.
Fall term, two hours weekly, at an hour to be appointed.
22. German Seminary: Kleist. Conducted mainly in German. Two to five hours' credit. Professor Vos.
Winter and Spring terms, two hours weekly, at an hour to be appointed.
Open to students who have completed Course 28.
- [27. Middle High German. Outline of the phonology, accidence and syntax. Reading of selections from the lyric poets, the popular and court epic. Professor Vos.
Fall and Winter terms, two hours weekly, at an hour to be appointed.]
Omitted in 1911-12. See Course 10 of the Department of Comparative Philology.

29. History of the German Language. The relation of German to other Germanic languages; the dialectic divisions of Modern German; origins of the literary language; changes since the middle period; history of German orthography. Conducted partly in German. Professor Vos.

Spring term, two hours weekly, at an hour to be appointed.

Behaghel, 'Die deutsche Sprache' ('Das Wissen der Gegenwart'. Band 54).

DEPARTMENT OF COMPARATIVE PHILOLOGY

*GUIDO H. STEMPLE, Associate Professor.

The graduate courses offered below will be extended as required. They may be supplemented by certain of the courses listed as undergraduate, as well as by certain courses given in the other language Departments and in History, Social Science (Anthropology), Philosophy, and English. The time that can profitably be spent here in graduate study in Philology is at present about two years.

The collection of American, British, and German periodicals devoted to Indo-European philology is practically complete.

The more elementary courses of the Department are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue.

- [5. Comparative Philology of the Classical Languages. An advanced course in the science of language and Indo-European philology. Each student will emphasize the particular language in which he has had special training.

Fall, Winter, and Spring terms, M. W. F., at 10:00.

Giles, 'Manual of Comparative Philology for Classical Students'.

Open to students who have passed in Courses 2 and 3, and in thirty hours of language, and to advanced students in Latin or Greek.] Omitted in 1911-12.

4. Gothic. Grammar and reading; phonology of the early Germanic languages. Mr. ———.

Fall, Winter, and Spring terms, T. Th., at 10:00.

Wright, 'Primer of the Gothic Language'.

Open to students who have passed in Course 2 and in thirty hours of language, and to others at the option of the instructor.

Given every third year; see Courses 9 and 10.

*Absent on leave until August 1, 1912.

- [9. Old High German. Elements of the grammar, reading of selected texts, study of dialectal divergence. The method will be both comparative and historical.
 Fall, Winter, and Spring terms, T. Th., at 10:00.
 Wright, 'Old High German Primer'; Braune, 'Althochdeutsche Grammatik'; Braune, 'Althochdeutsches Lesebuch'.
 Open to students on same conditions as Course 4.]
 Omitted in 1911-12. Given every third year, following Course 4; see Courses 4 and 10.
- [10. Middle High German. (1) Fall term: Elements of the grammar, reading of easy texts, and study of the development of the German language. (2) Winter and Spring terms: Nibelungenlied, with special study of the popular epic.
 Fall, Winter, and Spring terms, T. Th., at 10:00.
 Wright, 'Middle High German Primer'; Paul, 'Mittelhochdeutsche Grammatik'; Robertson, 'Der arme Heinrich'; Zarncke, 'Das Nibelungenlied'.
 Open to students on same conditions as Course 4.]
 Omitted in 1911-12. Given every third year, following Course 9; see Courses 9 and 10.
- [11. Old Norse. Introduction to the language, and the reading of texts that throw light upon the popular literature of England and Germany.
 Fall, Winter, and Spring terms, M. W. F., at 10:00.
 Sweet, 'Icelandic Primer'; selected texts.
 Open to students who have passed in fifteen hours of Germanic philology and to others at the option of the instructor.]
 Omitted in 1911-12.
15. Seminary. Some topic in grammatical theory or the development of some English usage will be made the basis of study. Mr. ————.
 Fall, Winter, and Spring terms, W., 2:00 to 3:50.

DEPARTMENT OF ENGLISH

WILL D. HOWE, Professor of English.

CHARLES J. SEMBOWER, Professor of English.

HENRY T. STEPHENSON, Associate Professor of English.

FRANK AYDELLOTTE, Associate Professor of English.

RICHARD A. RICE, Acting Assistant Professor.

At present, two years may be spent with profit in pursuing work leading to the degree of Doctor of Philosophy. The Library is equipped for research work in several periods, is well provided with the principal periodicals, and with the publications of most of the learned societies. The instructors of the Department will direct competent advanced students in lines of investigation and research.

Following are the courses open to graduate students in the Department. The more elementary courses are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue.

- 33. Literary Criticism. Professor SEMBOWER, and Associate Professor AYDELOTTE.
Fall, Winter, and Spring terms, two hours a week.
- 35. Composition Seminary. Professor SEMBOWER, and Associate Professors STEPHENSON and AYDELOTTE.
- [41. The Anglo-Saxon Period.]
Omitted in 1911-12.
- 42. Chaucer. Associate Professor AYDELOTTE.
Fall, Winter, and Spring terms, two hours a week.
- [43. The Elizabethan Age (1557-1625).]
Omitted in 1911-12.
- 9. Elizabethan Drama. Associate Professor STEPHENSON.
Fall, Winter, and Spring terms, daily, at 10:00.
- 16. Shakspere. Associate Professor AYDELOTTE.
Fall, Winter, and Spring terms, T. Th., at 10:00.
- 44. The Age of Milton and the Age of Dryden (1625-1700). Professor SEMBOWER.
Fall, Winter, and Spring terms, T. Th., at an hour to be appointed.
- 45. The Eighteenth Century (1700-1770). Professor HOWE.
Fall term, daily, at 9:00.
- 46. Topics of Romanticism (1770-1832). Assistant Professor RICE.
Fall, Winter, and Spring terms, T. Th., at 11:00.
- 47. The Victorian Period (1832-1900). Professor SEMBOWER.
Fall, Winter, and Spring terms, two hours a week.

Not more than one-third of the work in English of a candidate for the degree of A.M. in English may consist of the courses listed above.

- [47. Metrics. A study of modern English meter.]
Omitted in 1911-12.
- [50. Research Course in Anglo-Saxon Literature. An investigation of sources and authorities; reading of Anglo-Saxon literature. Prerequisite, Comparative Philology 2. Five hours of credit may be secured in this course each term.]
Omitted in 1911-12.
- [51. Research Course in Middle English Literature. Reading of much prose, many romances, and some of the most important poems; study of sources and relationship. It is expected that students who take this course will be able to read Middle English, German, and French. Five hours of credit may be secured in this course each term.]
Omitted in 1911-12.

52. Elizabethan Literature. Studies in the various forms of literature of the Elizabethan Age; investigation of sources and relationships. The work may deal either with individual authors or special literary forms. A reading knowledge of German and French is required. Five hours of credit may be secured in this course each term. Associate Professors STEPHENSON and AYDELOTTE.
53. Seventeenth Century Literature. A research course in the literature from 1625-1700. Reading knowledge of German and French is required. Five hours of credit may be secured in this course each term. Professor SEMBOWER.
54. Eighteenth Century Literature. Studies in one of the fields of literature—the poetry, the drama, the essay, or the novel. Reading knowledge of German and French is required. Five hours of credit may be secured in this course each term. Professor HOWE and Assistant Professor RICE.
55. Research Studies in the Literature of the Nineteenth Century. Discussion of the various literary forms and study of the relationship between English and contemporary European literature. Reading knowledge of German and French is required. Five hours of credit may be secured in this course each term. Professors HOWE and SEMBOWER.

DEPARTMENT OF HISTORY AND POLITICAL SCIENCE

JAMES A. WOODBURN, Professor of American History and Politics.

SAMUEL B. HARDING, Professor of European History.

AMOS S. HERSHIEY, Professor of Political Science.

THOMAS L. HARRIS, Instructor in History.

LOGAN ESAREY, Research Fellow.

The Department is prepared to offer research work leading to A.M. and Ph.D. degrees, in the following fields: American Colonial History, the American Civil War and Reconstruction, English History in the Seventeenth and Nineteenth Centuries, the French Revolution, Diplomatic History, Political Philosophy, International Law, and the History of Indiana during the Middle Period, 1820-1860. In each of these fields good library collections are already at hand, to which constant additions are being made.

The following are among the periodicals and continuation sets at the disposal of advanced students of history and political science:

American Historical Association, Annual Reports, 1884-

American Historical Review, 1896-

American Journal of International Law, 1907-

American Magazine of Civics, 1894-6.

American Political Science Review, 1905-

Annales des Sciences Politiques, 1899-

- Annals of the American Academy of Political Science, 1890-
- Annuaire Historique, 1819-50.
- Annual Register, 1891-1828.
- Archives Diplomatiques, 1905-
- Camden Miscellany, 1847-
- Camden Society Publications, 1838-
- Columbia University Studies in History, Economics, and Public Law, 1891-
- Cyclopedic Review of Current History, 1893-1902.
- DeBow's Review, 1846-68.
- English Historical Review, 1889-
- Historical Manuscripts Commission Reports (Great Britain), 1870-
- Gulf States Historical Magazine, 1902-64.
- Hansard's Parliamentary Debates, 1812-1897.
- Harvard Historical Studies, 1896-
- Historische Zeitschrift, 1888-
- Iowa Journal of History and Politics, 1903-
- Johns Hopkins University Studies in History and Political Science, 1883-
- Magazine of American History, 1880-93.
- Niles' Weekly Register, 1811-49.
- Political Science Quarterly, 1886-
- La Revolution Française, 1899-
- Revue de Droit International et de Legislation Comparée, 1896-
- Revue Générale de Droit International et de Legislation Comparée, 1896-
- Revue Historique, 1895-
- Revue Politique et Littéraire: Revue Bleue, 1880-
- Royal Historical Society Transactions, 3d series, 1907-
- South Atlantic Quarterly, 1903-
- London Times (weekly ed.), 1896-7; 1901-
- University of Missouri Studies, 1901-
- University of Pennsylvania Publications: Series in Political Economy and Public Law, 1889-
- University of Wisconsin Bulletin: Economics, Political Science, and History series, 1894-99.
- Virginia Magazine of History and Biography, 1894-
- William and Mary College Quarterly Historical Magazine, 1902-
- Zeitschrift für Völkerrecht und Bundesstaatsrecht, 1906-

Candidates for the degree Ph.D., with History as major subject, will be examined on each of the following fields: (1) Ancient History, with emphasis at the option of the candidate in either Greek or Roman History; (2) Mediaeval and Modern History, with emphasis in either the mediaeval or the modern field; (3) English History, with emphasis either on the period before 1485, or after that date; and (4) American History, with chief emphasis either on the period before 1783, or after that date. The examination on the special field of the thesis will naturally be more searching than elsewhere.

Following are the courses open to graduate students in this

Department. The more elementary courses are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue.

6. English History. Professor HARDING.
Fall, Winter, and Spring terms, M. W. F., at 10:00.
9. Renaissance and Reformation. Professor HARDING.
Fall, Winter, and Spring terms, M. W. F., at 9:00.
22. American Diplomatic History. Mr. HARRIS.
Fall, Winter, and Spring terms, T. Th., at 8:00.
- 23a. Government and Parties of England. Professor HERSHIEY.
Fall term, M. W. F., at 11:00.
- 23b. Government and Parties of Continental Europe. Professor HERSHIEY.
Winter term, M. W. F., at 11:00.
24. History of Political Ideas and Theory of the State. Professor HERSHIEY.
Spring term, M. W. F., at 11:00.
- [13. France in the Middle Ages. A study of the institutions of mediaeval France, and of the processes whereby the feudal type of society was transformed into the modern state. Lectures, collateral reading, and reports on assigned topics. Professor HARDING.
Fall and Winter terms, T. Th., at 11:00.]
Omitted in 1911-12.
16. Historical Method. The principles of historical investigation, with some practice in the use of sources and the preparation of papers. Professor HARDING.
Spring term, T. Th., at 9:00.
Langlois and Seignobos, 'Introduction to the Study of History'.
28. American Political Parties. A study of some of the more notable leaders and party programs in the political and constitutional controversies in the national period of American history. Designed to introduce the student to a first-hand knowledge of the materials relating to the leading issues in our national party development. Professor WOODBURN.
Fall, Winter and Spring terms, T. Th., at 9:00.
29. History of Indiana in the Middle Period of the Nineteenth Century, 1816-1860. A study of the development of the State, its settlement, population, laws, internal improvements, canals, banking system, schools, and social life. Mr. ESAREY.
Fall, Winter, and Spring terms, T. Th., at 11:00.
- 20a. Seminary in English History. Individual research work, under the guidance of the instructor, on some subject connected with modern English history. The results of the investigations are presented from time to time as reports and are finally embodied in papers in form suitable for publication, of which a copy must be left with the Seminary. Professor HARDING.
Fall, Winter, and Spring terms. Hours for individual conference to be arranged.

- 20c. Seminary in American Constitutional and Political History. In 1910-11 the period of the Civil War was studied. Study of the sources, reports of investigations, and thesis work. Professor WOODBURN. Fall, Winter, and Spring terms, M., at 4:00 to 5:30.
Open to advanced students and graduates.
- 20d. Seminary in International Law and Diplomacy. Research work and the special study of important topics, more especially of present day problems. During recent years such subjects were selected as the Alabama Claims, the Panama Affair, the causes of the Russo-Japanese War, the 'Open Door' policy in China, and the genesis of the Monroe Doctrine. Professor HERSHÉY.
Fall, Winter, and Spring terms, at hours to be appointed.

DEPARTMENT OF ECONOMICS AND SOCIAL SCIENCE

ULYSSES G. WEATHERLY, Professor of Economics and Social Science.

WILLIAM A. RAWLES, Professor of Political Economy.

CLARENCE J. FOREMAN, Instructor.

While the graduate work of the Department is primarily intended to cover one year and to lead to the Master's degree, it may in certain cases be extended to cover the requirements for the Doctor's degree. In the following special fields the courses of instruction are ample and the research materials adequate: Economic History, Economic Theory, Money and Finance, Statistics and Statistical Method, Historical and Descriptive Sociology, Sociological Theory, and Social Technology.

The Department library is equipped with full sets of the most important public documents, both state and national, and has complete sets of most of the American, English, French, and German economic periodicals. Advanced students have direct access to these materials, and also to the special collections relating to charitable and correctional institutions. The Department is affiliated with the Charity Organization Society of Indianapolis, and through this means properly qualified students are enabled to come into direct contact with the social and economic problems of that city. Constant use is also made of the statistical materials in the various departments of the State government, and also in the State Library.

The more elementary courses of the Department are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue.

6. Money, Banking, and the Money Market. Professor RAWLES.
Fall, Winter, and Spring terms, T. Th., at 8:00.
3. Public Finance. Professor RAWLES.
Fall, Winter, and Spring terms, M. W. F., at 8:00.

9. Transportation. Professor RAWLES.
Spring term, M. W. F., at 9:00.
5. Advanced Political Economy. Mr. FOREMAN.
Fall, Winter, and Spring terms, M. W. F., at 11:00.
- 20a. Descriptive Sociology: Social Origins. Professor WEATHERLY.
Fall term, T. Th., at 10:00.
- 20b. Descriptive Sociology: Domestic Institutions. Professor WEATHERLY.
Winter term, T. Th., at 10:00.
- 20c. Descriptive Sociology: Demography. Professor WEATHERLY.
Spring term, T. Th., at 10:00.
- 4a. Social Pathology: Poverty and Charities. Professor WEATHERLY.
Fall term, M. W. F., at 10:00.
- 4b. Social Pathology: Crime and Penology. Professor WEATHERLY.
Winter term, M. W. F., at 10:00.
- 4c. Social Pathology: Special problems. Professor WEATHERLY.
Spring term, M. W. F., at 10:00.
10. Socialism and Social Reform. Professor WEATHERLY.
Fall term, T. Th., at 11:00.
- 7a. General Sociology: Social Forces. Professor WEATHERLY.
Winter term, T. Th., at 11:00.
- 7b. General Sociology: Social Efficiency. Professor WEATHERLY.
Spring term, T. Th., at 11:00.
8. Seminary in Economics and Sociology. Professors WEATHERLY and
RAWLES, and Mr. FOREMAN.
Fall, Winter, and Spring terms, W., 3:00 to 3:50.
- 8a. Research. Professors WEATHERLY and RAWLES, and Mr. FOREMAN.
Fall, Winter and Spring terms, at hours to be appointed.

DEPARTMENT OF PHILOSOPHY

ERNEST H. LINDLEY, Professor of Philosophy and Psychology.

WARNER FITE, Professor of Philosophy.

WILLIAM L. BRYAN, Lecturer on Ethics.

MELVIN E. HAGGERTY, Assistant Professor and Director of the Psychological Laboratory.

Following are the courses open to graduate students in the Department. The more elementary courses are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue:

34. Psychological Seminary. Professor LINDLEY and Assistant Professor HAGGERTY.
Fall, Winter, and Spring terms, two hours a week.
- [35. Modern Idealism. Professor FITE.
Fall, Winter, and Spring terms, T. Th., at 10:00.]
Omitted in 1911-12.

36. Advanced Logic and Methods of Science. Professor FITE.
Fall and Winter terms, two hours once a week at a period to be ar-
ranged.
5. Advanced Psychology. Professor LINDLEY or Professor FITE.
Fall, Winter, and Spring terms, at hours to be arranged.
- [30. Seminary in Philosophy. A course designed to aid advanced stu-
dents in the investigation of philosophical problems. The sub-
ject for 1909-10 was Problems of Contemporary Philosophy. Pro-
fessor LINDLEY.
Fall, Winter, and Spring terms, two hours a week.]
Omitted in 1911-12.
7. Comparative Psychology. Assistant Professor HAGGERTY.
Fall and Winter terms, M. W. F., at 11:00.
8. Psychological Research. Work arranged with individual students.
Professor LINDLEY and Assistant Professor HAGGERTY.
Fall, Winter, and Spring terms, at hours to be arranged.

DEPARTMENT OF MATHEMATICS

SCHUYLER C. DAVISSON, Professor.

DAVID A. ROTHROCK, Professor.

ULYSSES S. HANNA, Associate Professor.

ROBERT D. CARMICHAEL, Assistant Professor.

The graduate courses at present offered in the Department require three years for their completion, and lead to the A.M. and Ph.D. degrees.

The library of the Department, consisting of about 2,200 bound volumes, is located in Room 36, Wylie Hall. The library is open from 8:00 a.m. to 10:00 p.m., for use by students pursuing advanced work in mathematics. The collection of mathematical books consists of the more important English, French, and German texts, the collected works of Abel, Bernoulli, Cauchy, Cayley, Clifford, DeMorgan, Gauss, Jacobi, Lagrange, Lie, Möbius, Riemann, Schwartz, Smith, Steiner, and Weierstrass, together with the following sets of periodicals:

Acta Mathematica. Stockholm, Berlin, Paris. 1882 to date.

Akademie der Wissenschaften, Sitzungsberichte, Math.—Naturwiss. Klasse. Vienna. Current numbers.

Akademie van Wetenschappen, Verhandelingen. Amsterdam. Current numbers.

Akademie der Wissenschaften, Math.—Phys. Klasse. Berlin. Current numbers.

American Journal of Mathematics. Baltimore. 1878 to date.

American Mathematical Monthly. Springfield, Mo. 1884 to date.

Analyst (The). Des Moines, Ia. 1874-1883. Complete.

- Annali di Matematica. Milan. Current numbers.
- Annals of Mathematics. Charlottesville, Va., and Cambridge, Mass. 1884 to date.
- Annales scientifiques de l'École Normale Supérieure. Paris. 1864 to date.
- Archiv der Mathematik und Physik. Leipzig. 1841 to date.
- Arkiv for Mathematik og Naturvidenskab. Christiania. Current numbers.
- Atti della Reale Accademia dei Lincei. Rome. Current numbers.
- Bibliotheca Mathematica. Leipzig. Current numbers.
- Bulletin de la Société mathématique de France. Paris. 1872 to date.
- Bulletin de la Société physico-mathématique de Kasan. Kasan. Current numbers.
- Bulletin des Sciences mathématiques. Paris. Current numbers.
- Bulletin of the American Mathematical Society. New York. 1894 to date.
- Bulletin of the New York Mathematical Society. New York. 1891-1894. Complete.
- Cambridge Mathematical Journal. Cambridge. 1837-1845. Complete.
- Cambridge and Dublin Mathematical Journal. Cambridge. 1846-1854. Complete.
- Educational Times (Mathematical Reprints from the). London. 1863 to date.
- Giornale di Matematiche di Battaglini. Naples. 1862 to date.
- Il Bulletino di Matematico. Bologna. Current numbers.
- Jahrbuch über die Fortschritte der Mathematik. Berlin. 1868 to date.
- Jahresbericht der deutschen Mathematiker-Vereinigung. Leipzig. 1892 to date.
- Journal de l'École Polytechnique. Paris. Current numbers.
- Journal de Mathématiques pures et appliquées (Liouville). Paris. 1836 to date.
- Journal für die reine und angewandte Mathematik (Crelle). Berlin. 1826 to date.
- L'Education Mathématique. Paris. Current numbers.
- L'Entermédiaire des Mathématiciens. Paris. Current numbers.
- L'Enseignement mathématique. Paris. Current numbers.
- Mathematical Monthly (The). Cambridge, Mass. 1859-1861. Complete.
- Mathematical Magazine. Washington. 1882-1884.
- Mathematical Gazette. London. 1896 to date.
- Mathematical Messenger (The). Ada, Louisiana. 1887-1894.
- Mathematical Review. Worcester. 1896-1897. Complete.
- Mathematical Visitor. Erie, Pa. 1877-1883. Complete.
- Mathematische Annalen. Leipzig. 1869 to date.
- Mathematische und naturwissenschaftliche Berichte aus Ungarn. Leipzig. Current numbers.
- Mathesis. Ghent. 1881 to date.
- Messenger of Mathematics (The Oxford, Cambridge and Dublin). Cambridge. 1862-1871. Complete.
- Messenger of Mathematics (The). London and Cambridge. 1872 to date.
- Mitteilungen der mathematischen Gesellschaft in Hamburg. Leipzig. Current numbers.
- Monatshefte für Mathematik und Physik. Vienna. Current numbers.

- Nachrichten von der Königlichen Gesellschaft der Wissenschaften zu Göttingen. Mathematisch-physikalische Klasse. Berlin. 1873 to date.
- Nouvelles Annales de Mathématiques. Paris. Current numbers.
- Nyt Tidsskrift for Matematik. Copenhagen. Current numbers.
- Proceedings of the Edinburgh Mathematical Society. Edinburgh. 1883 to date.
- Proceedings of the London Mathematical Society. London. 1865 to date.
- Proceedings of the Mathematical-physical Society of Tokyo. Tokyo. Current numbers.
- Quarterly Journal of Mathematics, Pure and Applied. London. 1857 to date.
- Rendicenti del Circolo Matematico di Palermo. Palermo. 1884 to date.
- Revue de Mathématiques Spéciales. Paris. Current numbers.
- Revue Semestrielle des Publications mathématiques. Amsterdam. 1893 to date.
- Sächsische Gesellschaft der Wissenschaften. Berichte. Math.-Phys. Klasse. Leipzig. Current numbers.
- Sitzungsberichte der Berliner mathematischen Gesellschaft. Berlin. Current numbers.
- Transactions of the American Mathematical Society. New York. 1900 to date.
- Unterrichtsblätter für Mathematik und Naturwissenschaften. Berlin. Current numbers.
- Zeitschrift für Mathematik und Physik. Leipzig. Current numbers.
- Zeitschrift für mathematischen und naturwissenschaftlichen Unterricht. Leipzig. Current numbers.

Following are the courses open to graduate students in the Department. The more elementary courses are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue.

21. Functions of a Complex Variable. The fundamental operations, conformal representation, stereographic projection and mapping upon the Riemann sphere, many-valued functions, Riemann surfaces. Lectures and reports. Six hours' credit. Professor DAVISSON.
Two hours a week, throughout the year.
24. Elliptic Integrals and Elliptic Functions. Discussion of elliptic integrals of the three kinds; addition theorems, Jacobi's geometrical proof of addition theorem; Landen's transformation; applications. Four hours' credit. Associate Professor HANNA.
Fall and Winter terms, two days a week.
41. Contact Transformations. A study of Lie's 'Berührungs-Transformationen,' including the geometry of the plane, the geometry of the line-elements of space, and the theory of Pfaff's and Monge's equations. Six hours' credit. Professor ROTKROCK.
Fall and Winter terms, three days a week.

- [30. Theory of Surfaces. Lectures, assigned readings, and reports upon the general theory of surfaces and twisted curves; singularities of surfaces, asymptotic curves, lines of curvature, geodesic lines, and differential geometry are studied Professor DAVISSON.]
 Omitted in 1911-1912.
- [45. Calculus of Variations. Professor ROTHROCK.]
 Omitted in 1911-1912.
51. Linear Differential Equations. Existence theorems, function-theoretic character of the solutions, special equations, oscillation properties, boundary-value and expansion problems. Lectures and reports. Assistant Professor CARMICHAEL.
 Three hours a week, throughout the year.
- [39. Theory of Substitutions and the Galois Theory of Equations. Associate Professor HANNA.]
 Omitted in 1911-1912.
20. Mathematical Reading and Research. Professors DAVISSON and ROTHROCK, Associate Professor HANNA, and Assistant Professor CARMICHAEL.

The reading and research courses will be:

- 20a. Topics in the Theory of Functions and those relating to Differential Geometry. Professor DAVISSON.
- 20b. Topics in Lie's Theory of Groups. Professor ROTHROCK.
- 20c. Topics in the Theory of Invariants and Covariants. Associate Professor HANNA.
- 20d. Functional Equations. A research course on the theory of difference and other functional equations. Assistant Professor CARMICHAEL.

DEPARTMENT OF MECHANICS AND ASTRONOMY

WILBUR A. COGSHALL, Associate Professor of Astronomy.
 VERNON A. SUYDAM, Instructor in Mechanics.

Kirkwood Observatory, completed in 1900, is occupied by the Department. The building contains a library and computing room; a lecture room; dark room; a transit room, in which are a Bamberg universal instrument, a Howard sidereal clock, a mean time chronometer, and a chronograph; a dome twenty-six feet in diameter; and a room of the same size immediately below. In the dome is the refracting telescope, of which the 12-inch objective is by Brashear, and the mounting by Warner and Swasey, of Cleveland. The instrument has a focal length of about 15 feet, and is supplied with eyepieces magnifying from 130 to nearly 1,000 diameters; also with polarizing helioscope, diagonal eyepiece, and an electrically illuminated micrometer; there are

both coarse and fine circles in right ascension and declination, the fine circles having reading microscope and electrical illumination.

The Department has in a separate building, a mounting, designed and built by the Department, that carries a 4-inch Browning refractor, a 5-inch portrait lens and an 8-inch parabolic mirror, for the photography of comets, nebulæ, etc.

This building contains also a cœlostat and horizontal telescope. The objective of the telescope has a diameter of 9 inches and a focal length of 64 feet. Both the plane of the cœlostat and the lens are by Pettdidier, of Chicago.

For an account of the Lawrence Fellowship in Astronomy, see page 14.

The Department receives telegraphic bulletins of discoveries made at American and European observatories.

Following are the courses open to graduate students in the Department. The more elementary courses are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue.

14. Orbita of Spec+roscopic Binaries. Associate Professor COGSHALL.
Winter term, T. Th., at 2:00.
8. Theoretical Mechanics. Mr. SUYDAM.
Fall, Winter, and Spring terms, M. W. F., at 9:00.
15. Celestial Mechanics. An introductory course. Associate Professor COGSHALL.
Spring term, M. W. F., at 11:00.
Open to students who have passed in Course 7.
12. Theoretical Astronomy. Integration of equations of motion; computation of orbits and ephemerides. Associate Professor COGSHALL.
Fall term. Hours and credit to be arranged with each student.
13. Astronomical Research. A limited number of students will be permitted to undertake research work under the supervision of the Department. The equipment is best suited for work in astronomy of precision and celestial photography. Associate Professor COGSHALL.
Fall, Winter, and Spring terms. Hours and credit arranged with each student.

DEPARTMENT OF PHYSICS

ARTHUR L. FOLEY, Professor of Physics.

ROLLA R. RAMSEY, Associate Professor of Physics.

The Department offers a full course leading to the degree of Ph.D.

The supply of apparatus for the presentation of courses in modern experimental physics is fairly complete. The equipment

and facilities for work have been largely increased during the past three years, especially in the way of delicate instruments and accurate standards for advanced study.

The Library of the Department of Physics contains about six hundred volumes, exclusive of sets of several journals. The following magazines are on file: 'Annalen der Physik', 'Annales de Chimie et de Physique', 'Beiblätter zu den Annalen der Physik', 'Physikalische Zeitschrift', 'The Electrical World and Engineer', 'The Electrician' (London), 'Journal de Physique', 'The Philosophical Magazine', 'The Physical Review', 'The Proceedings of the Physical Society of London', 'The Proceedings of the Royal Society', 'Le Radium', 'School Science and Mathematics', 'Science Abstracts' (A and B), 'Scientific American and Supplement', 'The Western Electrician', 'Cassier's Magazine', and 'The Manual Training Magazine'. Students have access also to the journals on file in the general library, and in the libraries of other Departments. Of these may be named: 'The American Journal of Science', 'The Astrophysical Journal', 'The Engineering and Mining Journal', 'The Engineering Magazine', 'Nature', 'Comptes Rendus', and 'Science'.

Following are the courses open to graduate students in the Department. The more elementary courses are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue.

12. The Electromagnetic Theory of Light. Professor FOLEY.
Fall, Winter, and Spring terms, T. Th., at 9:00.
Wood, 'Optics'.
13. Advanced Mathematical Electricity. Associate Professor RAMSEY.
Fall, Winter, and Spring terms, T. Th., at 8:00.
Webster, 'Electricity and Magnetism'.
34. Sound. Mathematical and physical properties of the vibration of sound-producing bodies, such as strings, rods, plates, air columns, membranes, etc. Assistant Professor DUTCHER.
Fall, Winter, and Spring terms, T. Th., at 10:00.
- 16b. Laboratory Practice in Spectroscopy and Photometry. Associate Professor RAMSEY.
Fall, Winter, and Spring terms, T. Th., at 2:00.
14. Advanced Laboratory Methods and Research. Professor FOLEY.
Fall, Winter, and Spring terms, daily, at 1:00.
22. Current Physical Literature. Professor FOLEY.
Two hours a week throughout the year, at an hour to be appointed.
30. Advanced Theoretical Physics. A critical study of standard treatises and memoirs. Professor FOLEY.
Two hours per week, at a time to be appointed.

DEPARTMENT OF CHEMISTRY

ROBERT E. LYONS, Professor.

LOUIS S. DAVIS, Professor.

OLIVER W. BROWN, Associate Professor.

FRANK C. MATHERS, Assistant Professor.

CLARENCE E. MAY, Assistant Professor.

ALPHEUS R. NEES, Teaching Fellow.

The Department of Chemistry has general, special, and private laboratories, a laboratory room, a lecture room, balance rooms, an incubator room, a stock room, museum, etc. Special laboratories are provided for electrochemistry, assaying and electric furnace work, organic, inorganic and physiological chemistry, water and gas analysis, spectroscopic analysis. The laboratories comprise eleven large, well-lighted rooms, equipped with work-stands, capable of accommodating two hundred and seventy-five students. Each room is provided with fume hoods and air tight registers connected with a ventilating fan for the removal of offensive and poisonous gases.

The general equipment for graduate work, including laboratory and library facilities, has been materially increased during the past year.

Special attention is given to inorganic, organic, physiological, and physical chemistry and to electrochemistry, technical analytical chemistry, and electro-metallurgy.

The graduate work of the Department, leading to the degree A.M. and Ph.D., comprises advanced laboratory, lecture, library and seminary work in the lines indicated above, and special graduate courses described below. A thesis embodying original investigation is required for an advanced degree.

The laboratories for advanced work and the departmental library are open from 8:00 a.m. to 5:00 p.m. There are no classes in the laboratories; each student works independently. A five-hour laboratory course requires two and one-half actual hours of laboratory work daily.

Following are the courses open to graduate students in this Department. The more elementary courses are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue.

19. Physical Chemistry. Laboratory work. Associate Professor BROWN.
22. Electrochemistry. Associate Professor BROWN and Mr. NEES. Winter term. A. Lectures, T. Th., at 8:00. B. Laboratory, M. W. F., 1:00 to 4:50.

23. Electrochemistry. Associate Professor BROWN and Mr. NEES.
Spring term. A. Lectures, T. Th., at 8:00. B. Laboratory, M. W. F., 1:00 to 4:50.
29. Storage Batteries. Lectures and laboratory work. Associate Professor BROWN and Mr. NEES.
Fall term.
13. Elementary Metallurgy and Assaying. Lectures and laboratory work. Associate Professor BROWN and Mr. NEES.
Fall term. Lectures, T. Th., at 8:00; laboratory work, F. S., 8:00 to 11:50.
15. Advanced Technical and Engineering Analysis. Laboratory work. Assistant Professor MATHERS.
Spring term, daily.
32. Gas and Fuel Analysis. Lectures and laboratory work. Assistant Professor MATHERS.
Winter term, three hours a week.
33. Spectrum Analysis and Sugar Analysis. Lectures and laboratory work. Assistant Professor MATHERS.
Fall term, two hours a week.
26. Chemical Engineering. Associate Professor BROWN.
Fall term. Lectures, M. W. F., at 8:00.
14. Seminary. Reports on current literature and special topics. (1) Fall term: Inorganic Chemistry. Assistant Professor MATHERS. (2) Winter term: Organic Chemistry. Professor LYONS and Assistant Professor MAY. (3) Spring term: Electrochemistry and Industrial Chemistry. Associate Professor BROWN and Assistant Professor MAY.
Fall, Winter, and Spring terms, Th., at 7:00 p.m.
- 12a. Research in Organic or Physiological Chemistry. Professor LYONS and Assistant Professor MAY.
Fall, Winter, and Spring terms, daily, 8:00 to 5:00.
- 12b. Research in the Chemistry of the Alkaloids. Professor DAVIS.
Fall, Winter, and Spring terms, daily, 8:00 to 5:00.
- 12c. Research in Physical Chemistry and Electrochemistry. Associate Professor BROWN.
Fall, Winter, and Spring terms, daily, 8:00 to 5:00.
- 12d. Research in Inorganic Chemistry. Assistant Professor MATHERS.
Fall, Winter, and Spring terms, daily, 8:00 to 5:00.
- 18c. Advanced Physical Chemistry. Lectures on selected chapters of Physical Chemistry. Associate Professor BROWN.
Spring term, T. Th., at an hour to be arranged.

24. Advanced Electrochemistry and Electro-Metallurgy. (A) Advanced laboratory work and research in pure and applied electrochemistry and electro-metallurgy, including investigations in electric furnace work, refining and extraction of metals, electro-synthesis of organic and inorganic compounds, manufacture of storage batteries, and of industrial electrochemical processes. (B) Lectures on the design and operation of commercial electric furnaces and on electric furnace processes and products. Associate Professor BROWN and Mr. NEES.

Fall, Winter, and Spring terms. Laboratory work, daily, 8:00 to 4:50; lectures, Winter term, F., at 8:00.

Students in this course are recommended to take Physics 10 and 24.

25. Advanced Organic Chemistry. A continuation of Course 6. (A) Lectures and recitations on selected chapters of organic chemistry. The topics considered in 1919 were: (a) The radical, (b) benzene nucleus, (c) stereoisomerism of carbon, (d) sugars, purins, proteins, terpenes and alkaloids. (B) Laboratory work or research in synthetic or analytical organic chemistry. Assistant Professor MAY.

(A) Winter and Spring terms, T. Th., 11:00. (B) Fall, Winter, and Spring terms, daily, 8:00 to 4:50.

Cohen, "Text Book of Organic Chemistry"; Roscoe and Schorlemmer, "Treatise on Chemistry"; Hammerstein, "Physiological Chemistry"; Hensler-Pond, "Terpenes".

Presupposes Courses 6¹, 6², 7.

31. Advanced Inorganic Chemistry. Laboratory work. The preparation and study of the properties and reactions of the different compounds of the rare and uncommon elements, followed by research. This includes a review of the literature relating to the element that is being studied. Assistant Professor MATHERS.

Fall, Winter, and Spring terms, M. W. F., 8:00 to 4:50.

DEPARTMENT OF GEOLOGY

EDGAR R. CUMINGS, Professor.

JOSHUA W. BEEDE, Associate Professor.

The work offered by the Department leading to the Ph.D. degree consists largely of research. Courses 10 and 13 are entirely of this nature. The problems offered for investigation are confined for the most part to stratigraphic geology and paleontology, although several studies in economic and geographic geology have been successfully prosecuted by students in the past.

In stratigraphic geology the subjects covered by the researches of the Department have been concerned chiefly with the Ordovician and Mississippian rocks of Indiana, and with the Permian and Upper Carboniferous rocks of Kansas, Oklahoma and

Texas. In pure paleontology the Department is especially equipped for the study of problems in the development of Paleozoic Brachiopoda and Bryozoa, and considerable work has already been published in this field.

For the prosecution of researches along the lines indicated above, the Department is adequately equipped. The collections of fossils are especially rich in material from the Ordovician, Silurian and Mississippian of Indiana, and the Upper Carboniferous and Permian of Kansas. The latter collections are among the best in America. A special feature of the collections is the wealth of screenings containing immature stages of Brachiopoda, Bryozoa, etc.

The laboratory equipment contains the usual apparatus for the preparation of material, and machinery for cutting, grinding, and polishing thin sections of fossils. An enlarging camera, with special lighting appliances and combinations of lenses for a wide range of work, is available as an aid in the proper illustration of paleontological material.

The Department receives the principal American and European periodicals dealing with Geology, Geography, and Paleontology.

Following are the courses open to graduate students in the Department. The more elementary courses are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue.

3. Economic Geology. Associate Professor BEEDE.
Winter term, daily, at 10:00.
5. Systematic Paleontology. Professor CUMINGS and Associate Professor BEEDE.
Fall, Winter, and Spring terms, two to five hours at times to be arranged.
10. Research. Investigation of geological and paleontological problems.
A careful report on each investigation is required, in proper form for publication. Professor CUMINGS and Associate Professor BEEDE.
Fall, Winter, and Spring terms, daily, 9:00 to 4:50.
13. Advanced field work. Continuous work in the field for a month or more in the Summer, Fall, or Spring. The course will usually form part of the research work submitted for an advanced degree. The work must be largely independent, but will always be under the general oversight of a member of the Department.
- 5a. Evolution. Study of the principles of evolution, as illustrated by fossil organisms. Professor CUMINGS.
Winter term, at an hour to be arranged.

- [14. Stratigraphic Geology. A thorough study of the literature of the various geologic systems. The history of their investigation and the present knowledge of their divisions, distribution, faunas, and paleogeography will be exhaustively considered. Professor CUMINGS.

Fall, Winter, and Spring terms. Lectures, T. Th., at 10:00.]

Omitted in 1911-12.

DEPARTMENT OF BOTANY

DAVID M. MOTTIER, Professor.

FRANK M. ANDREWS, Associate Professor.

JAMES M. VAN HOOK, Assistant Professor.

Graduate work leading to the degree of Master of Arts in Botany comprises special studies along some line indicated in the advanced courses enumerated below, or the investigation of some problem of a more limited scope. For the degree of Doctor of Philosophy, the subject of the thesis is selected from some line of morphology, cytology, physiology, or mycology. A reading knowledge of German and French is assumed.

The departmental library contains the more necessary works of reference and the principal botanical journals.

Following are the courses open to graduate students in the Department. The more elementary courses are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue.

4. Morphology of Fungi. Assistant Professor VAN HOOK.

Fall, Winter, and Spring terms, daily, 1:00 to 3:00.

5. Physiology. Associate Professor ANDREWS.

Winter and Spring terms, daily.

6. Cytology. Professor MOTTIER.

Fall, Winter, and Spring terms, daily.

- 5a. Advanced Physiology. Special studies will be offered to those pursuing work for advanced degrees. Associate Professor ANDREWS.

Fall, Winter, and Spring terms, daily.

7. Research in Morphology and Cytology. Problems for special investigation in morphology and cytology will be assigned to students who are prepared to undertake original work. Professor MOTTIER.

Fall, Winter, and Spring terms, daily.

Ability to read German and French is assumed.

13. Morphology of the Algae. A study of the life-history and of the development of vegetative and reproductive organs in certain algae. The work is confined very largely to fresh-water forms. Professor MOTTIER.

Fall, Winter, and Spring terms, daily.

18. Investigations in Mycology and Plant Pathology. Assistant Professor VAN HOOK.

Fall, Winter, and Spring terms, daily, 1:00 to 3:00.

DEPARTMENT OF ZOOLOGY

CARL H. EIGENMANN, Professor and Director of the Biological Station.
FERNANDUS PAYNE, Assistant Professor.

Full work leading to the degree Ph.D. is offered in Course 6. It is purely a research course, and offers the widest choice of subjects permitted by the equipment of the Department.

The subjects selected have radiated from two centers. One of these is the problem or problems of the freshwater fauna of tropical America. At present the Department is engaged in a study of divergent evolution as shown by the tropical American Characin fishes.

The Department is well equipped for this work. The most important of the zoological collections is the collection of fishes, comprising many thousand specimens. Arrangements have been made for coöperation with various other institutions, by which the largest aggregation of collections of South America freshwater fishes in the world is available for the monographs in preparation. By special arrangement the collections of Harvard University, made by Professor L. Agassiz and his assistants during the Thayer expedition, and by others, are available for a monograph on the American Characins.

The Department has entered into vital relations with the Carnegie Museum of Pittsburg. Under the direction of Dr. W. J. Holland, director of this Museum, Mr. John Haseman, A.M., '07, during 1907-1910, explored the coast rivers of Brazil, Uruguay, and Argentina, between the Rio San Francisco and Buenos Aires. He ascended the Rio Paraguay, crossed to the Guaporé and descended that river and the Rio Madeira to Manaos, on the Amazon, making collections on the way.

From August to December, 1908, Professor Eigenmann, with Mr. S. E. Shideler as volunteer assistant, explored the Demerara, Essequibo, and Potaro rivers of British Guiana. Very extensive

collections were made in the lowland, as well as above the Kaieteur, a vertical fall of 741 feet of the Potaro river. The results of the expedition are being published by the Carnegie Museum as reports of the British Guiana Expedition of Indiana University and the Carnegie Museum. The final report on the fishes is in press.

Mr. Jacob Gimbel, of Vincennes, Ind., provided the funds to equip and maintain another expedition to British Guiana, which started in August, 1910. Mr. Max Ellis, A.M., '08, and Mr. William M. Tucker, A. M., '09, led the expedition.

The second center of departmental interest has been, and is, the subject of heredity, especially: (A) The history of the Sex Cells, (B) Variation, (C) The rate of ontogenetic and phylogenetic modification of the sense organs of Cave Animals, (D) Experimental Zoölogy.

For the study of cave animals (C) the facilities of the Department are ideal. The University is located at the edge of the great cave region. By act of the Legislature, the Donaldson estate near Mitchell, Indiana, has been placed in the keeping of the trustees of Indiana University. On it are situated numerous sink-holes, dry caves, and an underground water-course at least two miles long. This underground river is rich in blind fishes and other blind aquatic animals. A small laboratory and dwelling has been erected on the farm, and is in charge of a research fellow, appointed from year to year. In the study of cave animals the Department has in the past had the coöperation of the Carnegie Institution, the American Association for the Advancement of Science, and the Elizabeth Thompson Science Fund.

For the study of variation (B) in non-migratory vertebrates in a 'unit of environment' this Department organized and has since maintained a fresh-water Biological Station. It is at present located on Winona Lake, Kosciusko County, Indiana, in the grounds of the Winona Assembly. The Station owns, as a gift of the Winona Assembly, two buildings, 20 x 45 feet, each two stories high. The buildings are on the lake front, at the mouth of Cherry Creek. The Station also owns boats, nets, sounding and temperature apparatus, glassware, etc. Microscopes and other needed apparatus are moved to the Station from the University.

For the study of sex cells (A), and Experimental Zoölogy (D), under the direction of Dr. Payne, the Department owns all the necessary apparatus, and the surroundings of the University offer an abundance of material.

Following are the courses open to graduate students in the Department. The more elementary courses are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue.

3. Advanced Zoölogy. Professor EIGENMANN and Assistant Professor PAYNE.
Fall, Winter, and Spring terms, five hours a week.
4. General Biological Problems: (A) The development of the idea of evolution and Darwinism; (B) The laws of heredity. Professor EIGENMANN.
Spring term, daily, at 9:00.
5. Seminary. Weekly meetings of advanced students and instructors to discuss current literature and report on investigations in progress. Professor EIGENMANN and Assistant Professor PAYNE.
Fall, Winter, and Spring terms, M., at 4:00.
6. Research. Special investigation of zoölogical problems, with a report on each investigation. Branches in which subjects have in the past been selected and reported upon are Variation, Degeneration, Regeneration, Sense Organs, Embryology of Fishes, Faunal and Systematic Studies of Fishes, Ecology of Cave and Freshwater Animals. For a fuller statement, see the general statement of the Department. Professor EIGENMANN and Assistant Professor PAYNE.
Fall, Winter, and Spring terms, daily, 8:00 to 4:50.
7. Biological Survey. A continuation of the previous work in the physical and biological features of Winona Lake and its environs. Professor EIGENMANN.
Summer term, at the Biological Station.

DEPARTMENT OF ANATOMY

BURTON D. MYERS, Professor.

AUGUSTUS G. POHLMAN, Professor.

Following are the courses open to graduate students in the Department. The more elementary courses are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue.

13. Research Work. Opportunity for research work is offered to advanced students who may have at least one-half their time for one year free for the work. Professors MYERS and POHLMAN.
Fall, Winter, and Spring terms, at hours to be appointed.
15. Advanced Course in Anatomy. Open to students who have completed the dissection of the human body, or Course 8, and desire to do special or advanced work. Professors MYERS and POHLMAN.
Fall, Winter, and Spring terms, at hours to be appointed.

PHYSIOLOGY AND PHARMACOLOGY

WILLIAM J. MOENKHAUS, Professor.

—————, Assistant Professor.

Facilities for research leading to the higher degrees are available within restricted lines in general Physiology.

Following are the courses open to graduate students in the Department. The more elementary courses are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue.

6. Advanced Physiology. Professor MOENKHAUS.
Fall, Winter, and Spring terms, at hours to be arranged.
7. Pharmacology. Assistant Professor ———.
Spring term, M. W. F., 1:00 to 4:50.
10. Research. Problem work in certain phases of general physiology may be taken by those properly equipped. Professor MOENKHAUS.
Fall, Winter, and Spring terms, daily, 8:00 to 4:50.

DEPARTMENT OF PATHOLOGY

HENRY R. ALBURGER, Professor.

The following course is open to graduate students in the Department. The more elementary courses are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue.

4. Advanced Work and Research. Advanced diagnostic work or research work under the direction of the head of the Department. The facilities permit work along any of the lines of pathological or bacteriological research. Professor ALBURGER.
Fall, Winter, and Spring terms, daily, 8:00 to 4:50.

EDUCATION.

*ERNEST O. HOLLAND, Professor of Secondary Education.

WILLIAM W. BLACK, Professor of Elementary Education.

ELMER E. JONES, Professor of the History and Philosophy of Education.

WALTER A. JESSUP, Professor of School Administration.

HENRY LESTER SMITH, Lecturer on Education.

Graduate work is offered in the School of Education, and special programs leading to the M.A. and Ph.D. degrees, with the Master's and Doctor's certificates of Education, will be arranged on application.

*Absent on leave.

In the future, as in the past, the best work of students in the courses in research work and in the pedagogical seminary will be published* under the title 'Contributions from the Pedagogical Seminary of Indiana University.'

Following are the courses open to graduate students in the School. The more elementary courses are not here listed; for these or for fuller statements of the courses below, see the bulletin of the School of Education.

- S. Secondary Education in Germany, France, and England. Professor JESSUP.
Fall, Winter, and Spring terms, at 11:00.
- 6. History of Education. Professor JONES.
Fall, Winter, and Spring terms, T. Th., at 8:00.
- 10. Philosophy of Education. Professor JONES.
Fall, Winter, and Spring terms, M. W. F., at 8:00.
- 15. School Administration. Professor JESSUP.
Fall, Winter, and Spring terms, M. W., at 7:00 p.m.
- 16a. Educational Seminary. Professor JONES.
Fall, Winter, and Spring terms, T., at 7:00.
- 16b. Seminary in Social Education. Professor JESSUP.
Fall term, two hours a week. Repeated in the Spring term.
- 17. Advanced Educational Psychology. Professor JESSUP.
Fall, Winter, and Spring terms, T. Th., at 9:00.
- 9. Orthogenics. Professor JONES.
Fall, Winter, and Spring terms, T. Th., at 3:00.
- 11. Principles of Organization and Supervision. Development of the law and principles that control in the organization and conduct of the school. The law evolving the school. The curriculum under its logical and psychological aspects; the basis for making a course of study; comparison of typical courses. Universal method in teaching. The organization of a subject. The organic relation of the logical, esthetic, and ethical ends in education. Professor BLACK.
Fall, Winter, and Spring terms, T. Th., at 2:00.
Open to Graduate students, and to teachers of wide experience.
- 18. Research in Education.
 - a. The problems of the Elementary School. Professor BLACK.
 - b. The History and Philosophy of Education. Professor JONES.
 - c. The Psychology of the Processes of Education. Professor JESSUP.
 - d. Secondary Education. Professor HOLLAND.
 - e. School Administration. Professor JESSUP.

Problems and hours to be arranged with professors in charge.

Indiana University comprises the following schools:

The College of Liberal Arts,
The School of Education,
The Graduate School,
The School of Law,
The School of Medicine.

The following publications are issued annually by the University:

The University Studies,
The University Catalogue,
The Spring Term Bulletin,
The Summer Term Bulletin,
Bulletin of the College of Liberal Arts,
Bulletin of the School of Education,
Bulletin of the Graduate School,
Bulletin of the School of Law,
Bulletin of the School of Medicine.

Any of these publications, with the exception of The University Studies, will be sent free upon application to

THE REGISTRAR, INDIANA UNIVERSITY,
Bloomington, Indiana.

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VOL. X, No. 3

MAY 1, 1912

INDIANA UNIVERSITY BULLETIN



GRADUATE SCHOOL 1912

Entered as second-class matter May 16, 1908, at the postoffice at Bloomington, Indiana,
under act of Congress of July 16, 1894

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University Calendar

SUMMER TERM, 1912

<i>June 20, Thursday.</i>	Registration and enrollment for the Summer term.
<i>June 21, Friday.</i>	Recitations and lectures begin for the First half-term. (Instruction five days a week.)
<i>July 30, Tuesday.</i>	First half-term ends.
<i>July 31, Wednesday.</i>	Recitations and lectures begin for Second half-term. (Instruction six days a week.)
<i>Aug. 30, Friday.</i>	Summer term ends.

FALL TERM, 1912-13

<i>Sept. 24, Tuesday.</i>	Registration and enrollment in classes for the Fall term.
<i>Sept. 25, Wednesday.</i>	Recitations and lectures begin.
<i>Nov. 28 and 29, Thursday and Friday.</i>	Thanksgiving recess.
<i>Dec. 20, Friday.</i>	Fall term ends.

WINTER TERM, 1912-13

<i>Jan. 2, Thursday.</i>	Registration and enrollment in classes for the Winter term.
<i>Jan. 3, Friday.</i>	Recitations and lectures begin.
<i>Jan. 20, Monday.</i>	Foundation day, a holiday.
<i>Feb. 22, Saturday.</i>	Washington's birthday.
<i>Mar. 21, Friday, 6 p. m.</i>	Winter term ends.

SPRING TERM, 1912-13

<i>Mar. 26, Wednesday.</i>	Registration and enrollment in classes for the Spring term.
<i>Mar. 27, Thursday.</i>	Recitations and lectures begin.
<i>June 14, Saturday, 6 p. m.</i>	Spring term ends.
<i>June 18, Wednesday.</i>	University Commencement.

INDIANA UNIVERSITY BULLETIN

VOL. X

BLOOMINGTON, IND., MAY 1, 1912

NO. 3

Entered as second-class matter May 16, 1908, at the postoffice at Bloomington, Indiana, under the Act of July 16, 1894. Published from the University office, Bloomington, Indiana, semi-monthly April, May, and June, and monthly January, February, March, July, September, and November.

Prefatory Note

Indiana University, situated at Bloomington, is the State University of Indiana and the head of the public school system of the State. It takes its origin from the State Seminary, which was established by act of the Legislature, approved January 20, 1820. In 1828 the title of the Seminary was changed by the Legislature to that of the Indiana College; and in 1838 the University was given its present name. In 1867 Indiana University became coeducational.

The University comprises the following schools:

The College of Liberal Arts, organized in 1828,
The School of Law, organized in 1842, re-organized in 1889,
The School of Medicine, organized in 1903,
The Graduate School, organized in 1904,
The School of Education, organized in 1908.

The first advanced degrees, conferred for graduate work, were granted in 1882. During the eighties, well defined regulations for graduate work and graduate degrees were stated in the University catalogue, and a considerable number of graduate students were enrolled, especially in the natural sciences. In the years 1882 to 1893, inclusive, the University graduated 14 Doctors of Philosophy, 99 Masters of Arts, and 12 Masters of Science. For some years following 1893, however, the degree of Doctor of Philosophy was not conferred.

In 1904 there took place a segregation and formal organization of the Graduate School, and in 1908 the office of Dean of the Graduate School was created.

This number of the Bulletin is devoted to setting forth the facilities for graduate work in the several Departments of the

University. Courses intended primarily for graduate students are described in full. Brief announcements are given of courses intended for both graduates and undergraduates. For further description of the latter courses, see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue.

The attention of graduates of other Indiana Colleges is invited to the announcement on page 14 of ten fellowships recently established by the Board of Trustees, for such students. The value of these fellowships is \$200 each; they also carry with them exemption from contingent and library fees. For further information concerning the Graduate School, address,

THE DEAN OF THE GRADUATE SCHOOL,

Bloomington, Indiana.

Officers and Faculty of the Graduate School

COUNCIL

CARL H EIGENMANN, Ph.D., Professor of Zoölogy, Dean of the Graduate School.

JAMES ALBERT WOODBURN, Ph.D., LL.D., Professor of American History and Politics.

HAROLD WHETSTONE JOHNSTON, Ph.D., L.H.D., LL.D., Professor of Latin.

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EDGAR ROSCOE CUMINGS, Ph.D., Professor of Geology.

FRANK WILLIAM TILDEN, A.M., Associate Professor of Greek.

WILBUR ADELMAN COGHILL, A.M., Associate Professor of Astronomy.

CARLOS EVERETT CONANT, Ph.D., Acting Associate Professor of Comparative Philology.

JAMES M VAN HOOK, A.M., Assistant Professor of Botany.

FACULTY

WILLIAM LOWE BRYAN, Ph.D., LL.D., President of the University.

HORACE ADDISON HOFFMAN, A.M., Professor of Greek.

JAMES ALBERT WOODBURN, Ph.D., LL.D., Professor of American History and Politics.

CARL H EIGENMANN, Ph.D., Professor of Zoölogy, and Director of the Biological Station.

HAROLD WHETSTONE JOHNSTON, Ph.D., L.H.D., LL.D., Professor of Latin.

ROBERT EDWARD LYONS, Ph.D., Professor of Chemistry.

ARTHUR LEE FOLEY, Ph.D., Professor of Physics.

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BURTON DORR MYERS, A.M., M.D., Professor of Anatomy.

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 AMOS SHARTLE HERSHÉY, Ph.D., Professor of Political Science and International Law.

BERT JOHN VOS, Ph.D., Professor of German.

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LOUIS SHERMAN DAVIS, Ph.D., Professor of Chemistry.

†WARNER FITE, Ph.D., Professor of Philosophy.

WILL DAVID HOWE, Ph.D., Professor of English.

AUGUSTUS GROTE POHLMAN, M.D., Professor of Anatomy.

WILLIAM WESLEY BLACK, A.M., Professor of Elementary Education.

ELMER ELLSWORTH JONES, Ph.D., Professor of the History and Philosophy of Education.

CHARLES JACOB SEMBROWER, Ph.D., Professor of English.

EDGAR ROSCOE CUMINGS, Ph.D., Professor of Geology.

WALTER ALBERT JESSUP, Ph.D., Dean of the School of Education, and Professor of School Administration.

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FRANK WILLIAM TILDEN, A.M., Associate Professor of Greek.

*GUIDO HERMAN STEMPFL, A.M., Associate Professor of Comparative Philology.

CHARLES ALFRED MOSE MILLER, A.B., Associate Professor of Romance Languages.

ROLLA ROY RAMSEY, Ph.D., Associate Professor of Physics.

OLIVER W. BROWN, A.M., Associate Professor of Chemistry.

FRANK MARION ANDREWS, Ph.D., Associate Professor of Botany.

LILLIAN GAY BERRY, A.M., Associate Professor of Latin.

HENRY THI EW STEPHENSON, B.S., A.B., Associate Professor of English.

†FRANK AYDELOTTE, A.M., B.Litt., Associate Professor of English.

WILBUR ADELMAN COGSHALL, A.M., Associate Professor of Astronomy.

ULYSSES SHERMAN HANNA, Ph.D., Associate Professor of Mathematics.

JOSHUA WILLIAM BEEDE, Ph.D., Associate Professor of Geology.

CARLOS EVERETT CONANT, Ph.D., Acting Associate Professor of Comparative Philology.

EUGENE LESER, Ph.D., Assistant Professor of German.

JAMES M. VAN HOOK, A.M., Assistant Professor of Botany.

FRANK CURRY MATIERS, Ph.D., Assistant Professor of Chemistry.

CLARENCE EARL MAY, Ph.D., Assistant Professor of Chemistry.

MELVIN EVERETT HAGGERTY, Ph.D., Assistant Professor of Philosophy, and Director of the Psychological Laboratory.

°FERNANDUS PAYNE, Ph.D., Assistant Professor of Zoölogy.

RICHARD ASHLEY RICE, A.M., Assistant Professor of English.

ROBERT DANIEL CARMICHAEL, Ph.D., Assistant Professor of Mathematics.

WILL SCOTT, Ph.D., Assistant Professor of Zoölogy.

† Absent on leave from February 1 to August 1, 1912.

♦ Absent on leave from August 1, 1911, to August 1, 1912,

† Absent on leave from August 1, 1912, to August 1, 1913.

° Absent on leave from March 1, 1912, to January 1, 1913.

General Statement of the Graduate School

Purpose and Administration. The Graduate School furnishes opportunities for advanced work leading to careers in higher education and in certain lines of investigation. It does not offer work leading to professional degrees in Law or in Medicine.

The work of the School is a direct continuation of that of the College of Liberal Arts; as such it is the most advanced work in education undertaken by the State. The Graduate School stands, therefore, at the head of the University, and is the culmination of the public school system of the State.

The school is administered by the Council of the Graduate School. It is composed of members of the Faculty representing different fields of learning.

Not all departments of the University are at present equally equipped for extended graduate work. In recognition of this fact, the amount of graduate work offered by the different departments varies. Some departments offer work for the A.M. degree only, while others offer work leading to the degree of Ph.D.

Admission. Students holding a bachelor's degree in Arts or in Science from Indiana University, or the same degree or its equivalent from institutions of equal rank, are admitted to the Graduate School on presentation of the proper credentials. Persons holding the bachelor's degree from institutions whose requirements are considered to lack a year or more of being the equivalent of the A.B. degree from this institution, are not admitted to the Graduate School. They may enter the College of Liberal Arts, and are referred to the Dean of the College for their standing. Holders of the A.B. degree or its equivalent from institutions whose requirements lack less than a year of being the equivalent of the A.B. degree from this institution, may be admitted to the Graduate School. In such cases, work in addition to the minimum of forty-five hours for the A.M. degree will be required. The amount will be determined in each case by the Council of the Graduate School.

All graduate students will enroll at the beginning of each term, and those entering regularly organized classes will submit to the same regulations as undergraduate students. Work will in many cases be individual and not controlled by a recitation schedule. At

the time of entrance to the Graduate School, the student must submit a plan of the entire work he wishes to present for the master's or doctor's degree. This plan must be approved by the professor of the major subject and the Dean of the Graduate School.

Fees. Students who are legal residents of the State of Indiana are charged a Contingent fee of five dollars a term, and a Library fee of one dollar a term.

These fees cover in part the cost of the physical maintenance of the University, and are not applied to the cost of tuition, which is provided wholly by the State.

Students not legal residents of the State of Indiana, will be charged a Contingent and Library fee amounting to twenty dollars a term. For each Summer half-term, half the fee will be charged. This fee is in lieu of the regular Library and Contingent fees noted above.

The Laboratory fees in all courses are uniformly one dollar per credit hour.

The Gymnasium fee, if the work in physical training is taken, is one dollar a term.

An Examination fee of one dollar is charged for each make-up or special examination. This fee is paid to the Bursar; his receipt when presented to the proper instructor constitutes the authorization for holding the examination.

The fee for any degree is five dollars, and must be paid to the Bursar at least thirty days before graduation.

The Library. The Library of Indiana University at present contains eighty-five thousand catalogued volumes. The selection of these books has been made with a view to facilitating instruction and research. The collection is a well-balanced one, but is especially strong in literary and scientific periodicals. The list of periodicals received and permanently kept on file by the library numbers about four hundred, and includes American, English, German, French, and, to a less extent, Italian, Spanish, and Swedish publications. The library is made thoroughly usable by a carefully prepared card catalogue, by indexes, and by other bibliographical aids. The Library force consists of a librarian and twelve assistants, all of whom are at the service of any authorized user of the library.

In the library building are seminary rooms for the Departments of History, Economics, English, Philosophy, German, Romance Languages, Education, Latin, and Greek.

In addition to the central library, where the general literary and historical collections are housed, there are nine departmental collections, of varying sizes, kept in the different University buildings.

All books, with the exception of periodicals and books reserved for reference, may be drawn for home use. Each graduate student may draw five books for two weeks, with privilege of renewal.

The Library is open from Monday to Friday from 7:45 a.m. to 10:00 p.m., and on Saturday from 8:00 a.m. to 5:00 p.m.

DEGREES

Three advanced degrees, Master of Arts, Master of Science, and Doctor of Philosophy, are conferred by the University.

Master of Arts. The degree of Master of Arts may be conferred upon Bachelors of Arts of this University, or of any other institution of equivalent standing, following a residence at the University of a minimum of three terms and the completion of a minimum of forty-five hours of University credit.

Credits earned in excess of those required for the A.B., or the B.S., degrees, before the degree is conferred or a certificate of the completion of the work for the degree is issued, are not counted toward the A.M. degree.

Thirty of the total of forty-five hours required for the A.M. degree must be in one department, or in closely allied departments. Fifteen hours must be distinctly graduate in character. There is no restriction as to the amount of work that may be carried during any term.

Graduates of this University may be given leave of absence for one term of the required year to pursue a specific investigation.

The work for the A.M. degree may all be done in Summer terms, with the reservation that the student must be in residence during three out of four successive Summer terms. Summer half-terms may be counted toward the residence requirement, provided that not more than four half-terms be so counted and that the work for the degree be completed within five years.

Professional studies are not accepted for the graduate degrees, but research work on professional subjects may be accepted for these degrees at the option of the professor in charge of the major subject.

A thesis is required in all departments except that of Latin.

Master of Science. The degree of Master of Science may be conferred upon Bachelors of Science of Indiana University under the same conditions upon which the degree of Master of Arts is conferred on Bachelors of Arts.

Doctor of Philosophy. The degree of Doctor of Philosophy may be conferred upon graduates of this University, or of any institution of similar character and rank, upon the completion of an advanced course of study of not less than three years.

Each candidate for this degree will select a major subject consisting of the work of some one department or recognized subdivision of a department; and not less than two minors, at least one of which must be in some department related to, but distinct from that of the major subject.

The course for the degree will be pursued under the direction of a committee consisting of the heads of the departments in which the work is done. Its value will be determined by a final examination, and by the presentation of a satisfactory thesis. The thesis should usually embody original work upon some prescribed, or accepted, subject; it must always give evidence that the candidate is capable of forming an independent judgment upon the recent literature of his department.

A detailed statement of the work offered for the degree, indorsed by the professor in charge of the major subject, must be submitted to the Council of the Graduate School, not later than May 10 of the year in which the candidate presents himself for examination.

On the recommendation of the professor in charge of the major subject, and with the concurrence of the Council of the Graduate School, part of the three years' study required for this degree may be spent in residence at other universities.

The thesis of every candidate for the degree of Doctor of Philosophy shall be presented to the Council of the Graduate School on or before the first day of June of the year in which he is a candidate for the degree. The thesis must be indorsed by the head of the department as being in its final form, and ready for the press. If the candidate is recommended for the degree, arrangements must be made to deposit five printed copies of the thesis in the library.

Examinations of each candidate for this degree will be conducted by a committee consisting of all the instructors under whom graduate work has been taken, in the presence of such members of the Faculty of the school as care to attend.

At least one year before the final examination the candidate shall satisfy the professor in charge of the major subject of his ability to use French and German for purposes of investigation.

Application for Degrees. Application for advanced degrees must be filed with the Dean at the time of admission to the Graduate School. Application for the degree of Doctor of Philosophy must be on file at least one year before the candidate is admitted to the examination.

FELLOWSHIPS

Teaching Fellowships. A number of teaching fellowships are available for graduate students.

A Teaching Fellow is relieved from all term fees, and the fellowship carries with it an honorarium of between \$200 and \$500 annually. The highest amount will ordinarily be paid only if the incumbent is appointed for a third year. A Teaching Fellowship is primarily a recognition of scholarship. A portion of his time will be required in the service of the department in which he is appointed; but not less than two-thirds of each Fellow's time must be devoted to work leading to the Doctorate in Philosophy.

A Fellow may be appointed for three separate years, but not for more. Appointments are for one year, and do not necessarily imply a reappointment.

The following are Teaching Fellows during the year 1911-12:

CHARLES EDWARD CONNOR, A.B., Teaching Fellow in Physiology.
THADDEUS WILLIAMSON CULMER, A.B., Teaching Fellow in Chemistry.
CLARENCE EDMUND EDMONDSON, A.B., Teaching Fellow in Physiology.
JOSEPH CORRINGTON EDWARDS, B.S., Teaching Fellow in Education.
EUPHA MAY FOLEY, A.B., Teaching Fellow in Philosophy.
JESSE JAMES GALLOWAY, A.M., Teaching Fellow in Geology.
MARY THERESA HARMAN, A.M., Teaching Fellow in Zoölogy.
JOHN WILLIAM HEBEL, A.B., Teaching Fellow in English.
EDITH AMELIA HENNEL, A.B., Teaching Fellow in Botany.
MAYNE S HOWARD, A.B., Teaching Fellow in Economics.
EARL HUDELSON, A.B., Teaching Fellow in English.
MASON EDWARD HUFFORD, A.B., Teaching Fellow in Physics.
JOSEPH EDWARD LAYTON, A.B., Teaching Fellow in History.
EDWARD WESLEY LONG, A.B., Teaching Fellow in Chemistry.
LESLIE MACDILL, A.M., Teaching Fellow in Mathematics.
THOMAS EDWARD MASON, A.B., Teaching Fellow in Mathematics.
ALPHEUS RUSSELL NEES, A.M., Teaching Fellow in Chemistry.

CHARLES ELMER OWENS, A.M., Teaching Fellow in Botany.
WILLA NORENE PALMER, A.B., Teaching Fellow in Chemistry.
DANIEL WILSON PEARCE, A.B., Teaching Fellow in Philosophy.
THOMAS WATTERSON RECORDS, A.B., Teaching Fellow in Physics.
RUSSELL ALGER SHARP, A.B., Teaching Fellow in English.
SAMUEL ERWIN SHIDEKER, A.B., Teaching Fellow in Elementary Education.
HELEN GAIL SPAIN, A.M., Teaching Fellow in English.
CHARLES HADDON SPURGEON, A.B., Teaching Fellow in Zoölogy.
CLAUD EARL SUTTON, A.M., Teaching Fellow in Botany.
ROBERT EARL SWINDLER, A.B., Teaching Fellow in History.
DAYTON ULREY, A.B., Teaching Fellow in Physics.

Donaldson Fellowship in Zoölogy. The Donaldson Fellowship in Zoölogy, of the value of \$500, is open to students who are in large measure capable of doing independent work in biological subjects. The fellowship implies residence for twelve months at the cave farm of the University at Mitchell, Indiana. A certain amount of supervising work is required of the incumbent.

Lawrence Fellowship in Astronomy. The Lawrence Fellowship of the Department of Mechanics and Astronomy has been established by Mr. Percival Lowell, of the Lowell Observatory, upon the following terms and conditions:

1. The fellowship shall be known as the Lawrence Fellowship, in remembrance of the donor's mother, and is established in perpetuity, revocable, however, at any time at the will of the founder.
2. It shall be annually available and shall cover the college calendar year, that is, from commencement to commencement of the same.
3. The applicant shall be appointed by the Department, the donor reserving the right of final passing upon the suitability of the candidate so presented.
4. The Fellow shall be given time and opportunity for an original thesis on some astronomical subject looking to the taking of a Master's degree, the nature of which shall be decided by the Director and the Fellow. But the Fellow shall be expected to give general assistance in the work of the observatory during the period of his fellowship.
5. The Fellowship will pay \$600 and the Fellow's traveling expenses to and from the Observatory at Flagstaff, Ariz.; and a furnished room at the Observatory shall be free to the Fellow's use.

Fellowships for Graduates of Other Indiana Colleges. The Trustees of Indiana University, at their March meeting, 1910, es-

tablished ten Graduate Fellowships of an annual value of \$200 each, with exemption from term fees, to be held by graduates of other colleges in the State. In awarding these fellowships the policy will be to assign them to the most promising students, irrespective of the special field of study in which they wish to work, or the particular institutions from which they come. As between cases of equal merit, however, attention will be given to securing a distribution of the awards among different departments of study and different colleges of the State.

Applicants for these fellowships should file a statement of their educational history and of their plans with the Dean of the Graduate School. They should indicate in this statement the major subject which they wish to pursue, and give a transcript of their college record. They should also present at this time recommendations from their instructors, and such other evidences of their fitness as they can offer. Applications will be received up to April 15 of each year.

Applications will be referred in each case to the department concerned for a decision upon the respective merits of the applicants in that department. On the basis of the departmental reports, the Graduate Council will recommend to the Trustees the most eligible candidates for appointment.

These fellowships are not open to students doing professional work in law or in medicine.

Incumbents will not ordinarily be eligible for reappointment, but they will be eligible for appointment to teaching fellowships.

For application blanks, and further information, address the Dean of the Graduate School.

The following are the Fellows for 1911-12, with the department in which each is working:

HELEN MARGARET CONNOR.....	Latin.
A. B., Indiana State Normal School, 1911.	
MRS. HOPE WHITCOMB GRAHAM.....	History.
A. B., Butler College, 1911.	
ERNEST MARSHALL LINTON.....	Political Science.
A. B., Butler College, 1911.	
MABEL ELIZA MCLELLAN.....	Latin.
A. B., DePauw University, 1910.	
SHERLEY O'DAIR RHEA.....	Physics.
A. B., DePauw University, 1911.	
LOLA ELLA VANCE.....	Zoölogy.
A. B., DePauw University, 1907.	

Research Fellowships. There are, besides the fellowships mentioned above, research fellowships, which are awarded to students who have shown marked ability and who desire to investigate definite problems in which they are interested. Each case is decided on its merits. The compensation is fixed by the Board of Trustees, on the recommendation of the Graduate Council.

The following are Research Fellows during the year 1911-12:

- HALBERT PLEASANT BYBEE, A.B., Research Fellow in Geology.
EVERETT HARRISON CRAIG, A.B., Research Fellow in Chemistry.
LOGAN ESAREY, A.M., Research Fellow in Indiana History.
MARY ALICE GILBERT, A.B., Research Fellow in Latin.
JOHN HAMILTON KECK, A.B., Research Fellow in Chemistry.
IRA ELVER LEE, A.B., Research Fellow in Chemistry.
MARY ROGERS, A.M., Research Fellow in Orthogenies.

Special Rule Concerning Fellows. Holders of fellowships are not permitted, without the special permission of the Graduate Council, to do work for remuneration outside the University.

UNIVERSITY ORGANIZATIONS

The Graduate Club. A graduate club was founded in 1910 to establish closer relations among the graduate students, and between graduate students and the members of the faculty. Through closer association and acquaintanceship, the club aims to foster solidarity of interest. The meetings are in part social, and in part devoted to the presentation of papers by the members of the club, giving the results of some investigation carried on by the author. In this way students in the different departments are made acquainted with the work in various lines of research carried on in the University. Occasionally addresses are given by visitors of prominence. Membership in the club is open to all graduate students.

Sigma Xi. Sigma Xi is an organization especially for scientific students. It is a chapter of a national scientific fraternity, to which members of the faculty, graduate students, and seniors may be elected. Its object is to encourage investigation in science, pure and applied.

Phi Beta Kappa. Phi Beta Kappa is a chapter of the oldest Greek-letter fraternity, founded in 1776 for "the promotion of scholarship and friendship among students and graduates of American colleges." It is today no longer a secret society, but an honor society, having for its special aim the encouragement of liberal culture. At Indiana University, a certain number of seniors, not over ten per cent, are elected each year, partly at Thanks-

giving and partly at Commencement. The membership includes also certain members of the faculty, and a few others chosen directly from the ranks of the alumni. The chapter was established on Foundation Day, 1911.

Departmental Clubs. The following departments have special departmental clubs: Geology, Zoölogy, Physics, Chemistry, History, Philosophy, English, Mathematics, German, French, Spanish, and Comparative Philology. Membership in these clubs is open to faculty members of the department, graduate students, and undergraduates. The purpose of the clubs is to discuss topics of interest to members, and to promote social intercourse.

Departments and Graduate Courses of Instruction, 1912-13

** In the following list are included many courses which are open alike to graduates and advanced underclassmen. Only a skeleton announcement of these is here made; for full description see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue. Strictly graduate courses are described in full. The more elementary courses are not listed here at all.

DEPARTMENT OF GREEK

HORACE A. HOFFMAN, Professor.

FRANK W. TILDEN, Associate Professor.

The time that at the present may be profitably devoted to graduate work in Greek is one year, leading to the degree of A.M. A thesis on some subject connected with the seminary work of the year is required for the degree.

All candidates for A.M., with Greek as major subject, must take at least fifteen hours in Latin, in advance of the Latin taken in the undergraduate study.

Courses 9, 12, and 13, or any part of these courses, are also open as minors to graduate students who have not already had as part of their undergraduate study the work which they take in their courses for graduate credit.

The Department is well equipped for doing satisfactory work leading to the degree of Master of Arts. Besides the most important reference books, cyclopedias, dictionaries, lexicons, indexes, and standard editions of Greek writers, an effort has been made to build up an especially good collection of works treating of Euripides, since seminary work is generally given in that author. The Department has the chief older editions as well as nearly all of the later ones, and many special works bearing on Euripides.

The Library contains the most important classical journals, among them complete sets of 'The American Journal of Philology'; 'The American Journal of Archaeology'; 'The Classical Review'; Chicago, Cornell, and Harvard 'Studies'; 'Hermes'; 'Jahrbücher für classische Philologie'; 'Mitteilungen d. deutsch. arch. Inst. in Athen'; 'Philologus'; 'Rheinisches Museum'; 'Journal of Hellenic Studies'.

Among the most valuable works in the field of archaeology and art the following may be named: 'Antike Denkmäler'; 'Ausgra-

bungen von Olympia'; 'Carapanos'; 'Dodona'; Hamdye-Bey and Reinach's 'Nécropole à Sidon'; Homolle's 'Fouilles de Delphes'; Ohnefalsch-Richter's 'Cypros, die Bibel und Homer'; Overbeck's 'Griechische Kunstmynthologie'; Stackelberg's 'Die Gräber der Hellenen'; Fenger's 'Dorische Polychromie'; and the publications of the American and British Schools of Athens, and of the Egyptian Exploration Fund. Among the works on inscriptions and epigraphy the following may be mentioned: 'Corpus Inscriptionum Graecarum'; 'Corpus Inscriptionum Atticarum'; 'Inscr. Graec. Septentrionalis, Italiae, Pelopon., Insularum, etc.'; 'Die Inschriften von Priene', and the important writings of such authorities as Klein, Kretschmer, Meisterhans, etc. For palaeography and the study of the papyri, the following are accessible: Grenfell, Hunt, Kenyon, Mahaffy, Mayser, Mitteis, Thompson, and Wilkin. In the important field of vase-painting, the Library contains many valuable works. Among the most noteworthy are: Benndorf's 'Griechische und Sicilische Vasenbilder'; Collignon and Rayet's 'Histoire de la Céramique grecque'; Dechelette's 'Les Vases céramiques ornés de la Gaule romaine'; Furtwängler and Loeschke's 'Mykenische Vasen,' and 'Mykenische Thongefässer'; Furtwängler and Reichhold's 'Griechische Vasenmalerei'; Harrison and McColl's 'Types of Greek Vases,' and various books by Gardner, Huddleston, Klein, Kretschmer, Murray, Smith, and Walters.

The Department also owns upwards of 700 photographs of landscapes, buildings, and works of art in Greece, Italy, and Sicily; and has many lantern-slides, busts, casts, a model of the Acropolis at Athens, and a series of reproductions of the famous Tanagra Figurines.

Following are the courses open to graduate students in the Department. The more elementary courses are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue:

9. Lyric and Dramatic Poetry. Associate Professor TILDEN.
Fall, Winter, and Spring terms, daily, at 9:00.
12. Philosophical Prose. Professor HOFFMAN.
Fall, Winter, and Spring terms, T. Th., at 10:00.
13. Historical and Rhetorical Prose. Associate Professor TILDEN.
Fall, Winter, and Spring terms; M. W. F., at 10:00.
- 15a. Graduate Seminary. Euripides is the author usually studied, but other authors may be selected. In 1911-12 Plutarch's 'Pericles' was made the basis of the work, and the portions of Thucydides

and other authors bearing on the life and policies of Pericles were also studied. Professor HOFFMAN.

Fall, Winter, and Spring terms, W., at hours to be appointed.

- 15b. Graduate Seminary: Aeschylus. In 1911-12 all the plays and fragments were studied, chiefly with a view to the religious and ethical ideas of Aeschylus. Associate Professor TILDEN.

Fall, Winter, and Spring terms, F., at hours to be appointed.

DEPARTMENT OF LATIN

HAROLD W. JOHNSTON, Professor.

LILLIAN GAY BERRY, Associate Professor.

The graduate courses of the Department are intended to meet the wants of those making the teaching of Latin in schools and colleges their profession, whether or not they are candidates for a degree. The work of the first year (Courses 34 or 33, and 41) consists chiefly of lectures and recitations. After the first year the work is to a great extent individual (Courses 42 and 50), including, besides wide reading in authors of all periods, the first-hand investigation of some subject selected with the approval of the Department.

In the Summer term courses are offered for both graduates and undergraduates. The work for the A.M. degree may be done in three summers. The undergraduate courses may be counted to satisfy the language requirement for graduation in other departments, or as elective work, but may not be counted for graduation in Latin without the permission of the Department obtained in advance.

If Course 33 is taken in the undergraduate course, Course 34 should be made a part of the graduate work, and *vice versa*.

Following are the courses open to graduate students in the Department. The more elementary courses are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue.

- [33. Prose Writers of the Republic. Professor JOHNSTON.

Fall, Winter, and Spring terms, M. W. F., at 9:00.

Courses 33 and 34 are given in alternate years.]

Omitted in 1912-13.

34. Poets of the Republic. Professor JOHNSTON.

Fall, Winter, and Spring terms, M. W. F., at 9:00.

41. Topography and Monuments of Ancient Rome. Recitations, lectures, and assigned readings. Associate Professor BERRY.

Fall, Winter, and Spring terms, once a week, at an hour to be arranged.

Platner, 'Ancient Rome.'

Open to graduate students only.

42. Readings in Latin Literature. The student will be guided and assisted in reading very considerable portions of those authors not included in other courses, with stress laid upon the subject-matter rather than upon the language and style. Analysis and summaries will be prepared by the student and criticized by the instructor. Professor JOHNSTON and Associate Professor BERRY. Fall, Winter, and Spring terms, once a week, at an hour to be arranged.

Open to graduate students only.

43. Advanced Composition. This course is intended especially for teachers, but may be taken by any persons who need practice in writing Latin. Professor JOHNSTON.

Fall, Winter, and Spring terms, once a week, at an hour to be arranged.

Open to graduates and teachers of Latin.

50. Seminary. The critical study of the text of some standard author, with incidental investigation of problems in syntax, style, prosody, and so forth. In past years, Caesar, Sallust, Tacitus, and Plautus have been made the subjects of similar work. In 1912-13 it is proposed to make a study of Terence. The student should be provided with the critical edition of Umpfenbach and the text editions of Dziatzko and Fleckeisen. Professor JOHNSTON.

Fall, Winter, and Spring terms, M., 2:00 to 3:50.

Open to students who have had one year's graduate work.

DEPARTMENT OF ROMANCE LANGUAGES

ALBERT F. KUERSTEINER, Professor of Romance Languages.

GEORGE D. MORRIS, Associate Professor of French.

CHARLES A. MOSEMILLER, Associate Professor of Romance Languages.

The Department of Romance Languages offers one year of graduate work, all in French.

The Library is well equipped with works in French criticism, and has a fair selection of works of French literature. It contains, also, all of the volumes so far published by the 'Société des anciens textes français', and the following periodical publications:

Archiv für das Studium der neueren Sprachen und Literaturen.

Bibliothek des litterarischen Vereins in Stuttgart.

Euphorion.

Französische Studien.

Germanisch-Romanische Monatsschrift.

Literaturblatt für germanische und romanische Philologie.

Modern Language Notes.

Modern Language Review.

Modern Philology.

Publications of the Modern Language Association of America.

Revue Bleue.

Revue de Cours et Conférences.

Revue des deux Mondes.

Romania.

Zeitschrift für französische Sprache und Litteratur.

Zeitschrift für romanische Philologie.

Following are the courses open to graduate students in the Department. The more elementary courses are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue:

7. Seventeenth Century Poetry and Drama. Professor KUERSTEINER.
Fall, Winter, and Spring terms, M. W. F., at 9:00.
- [24. Eighteenth Century Poetry and Drama. Professor KUERSTEINER.
Fall, Winter, and Spring terms, M. W. F., at 9:00.]
Omitted in 1912-13.
- [10. Nineteenth Century: The Romantic Period. Associate Professor MORRIS.
Fall, Winter, and Spring terms, M. W. F., at 10:00.]
Omitted in 1912-13.
27. Nineteenth Century: The Realistic Period. Associate Professor MORRIS.
Fall, Winter, and Spring terms, M. W. F., at 10.00.
- [32. Contemporary Fiction. Associate Professor MORRIS.
Fall, Winter, and Spring terms, T. Th., at 10:00.]
Omitted in 1912-13.
33. Contemporary Drama. Associate Professor MORRIS.
Fall, Winter, and Spring terms, T. Th., at 10.00.
26. Advanced Composition. Associate Professor MOSEMILLER.
Fall, Winter, and Spring terms, T. Th., at 2.00.
13. Old French. Reading of texts; study of Old French phonology and morphology; exercises in tracing words from classical and from popular Latin to Modern French. Lectures. Professor KUERSTEINER.
Fall, Winter, and Spring terms, M. W. F., at 11:00.
Paris, 'Extraits de la Chanson de Roland'; Suchier, 'Aucassin et Nicolet' (French edition); Constans, 'Chrestomathie de l'ancien français'; Paris-Langlois, 'Chrestomathie du moyen-âge'; Paris-Langlois, 'Extraits des chroniqueurs français'.
Open to students who have studied French and Latin.

DEPARTMENT OF GERMAN

BERT J. VOS, Professor.

CARL W. F. OSTHAUS, Professor.

EUGENE LESER, Assistant Professor.

In combination with the Department of Comparative Philology, which gives courses in Gothic, Old High German, and Old Norse, the Department at present offers about thirty-five hours of graduate work. Students entering upon the graduate study of German must previously have completed the courses required for a major in the Department, or their equivalent. Courses 27 and 29 are, however, open to students of other departments than German upon the completion of the work of the Junior year. The library is well equipped with books for the special study of Classical and Nineteenth Century German literature.

The list of complete sets of periodicals and of current publications received includes the following, those marked with an asterisk representing complete sets:

Alemannia.

Allgemeine Zeitung. München.

*Archiv für das Studium der neueren Sprachen und Literaturen.

*Archiv für Litteraturgeschichte.

Archiv für nordisk Filologi.

*Beiträge zur Geschichte der deutschen Sprache und Literatur.

*Bibliothek des litterarischen Vereins in Stuttgart.

*Columbia University Germanic Studies.

Das Litterarische Echo.

*Euphorion.

*Forschungen zur neueren Literaturgeschichte, herausgegeben von F. Muncker.

German-American Annals.

*Germanisch-Romanische Monatsschrift.

*Goethe Jahrbuch.

*Indogermanische Forschungen.

Jahrbuch des freien deutschen Hochstifts.

*Jahrbuch der Grillparzer Gesellschaft.

Jahrbuch des Vereins für niederdeutsche Sprachforschung.

*Jahresbericht über die Erscheinungen auf dem Gebiete der Germanischen Philologie.

*Jahresberichte für neuere deutsche Litteraturgeschichte.

*Journal of English and Germanic Philology.

Korrespondenzblatt des Vereins für niederdeutsche Sprachforschung.

*Literaturblatt für germanische und romanische Philologie.

*Modern Language Notes.

*Modern Language Review.

*Modern Philology.

*Monatshefte für deutsche Sprache und Pädagogik.

- *Publications of the Modern Language Association of America.
- *Quellen und Forschungen.
- *Revue germanique.
- *Veröffentlichungen des Schwäbischen Schiller Vereins.
- *Vierteljahrsschrift für Litteraturgeschichte.
- Zeitschrift des Allgemeinen deutschen Sprachvereins.
- *Zeitschrift des Vereins für Volkskunde.
- Zeitschrift für Bücherfreunde.
- *Zeitschrift für deutsches Altertum.
- Zeitschrift für deutsche Mundarten.
- *Zeitschrift für deutsche Philologie.
- Zeitschrift für den deutschen Unterricht.
- *Zeitschrift für deutsche Wortforschung.
- Zeitschrift für die österreichischen Gymnasien.
- *Zeitschrift für vergleichende Litteraturgeschichte.

For Gothic and Old High German, see Courses 4 and 9 of the Department of Comparative Philology.

Following are the courses open to graduate students in the Department. The more elementary courses are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue:

14. German Usage. Assistant Professor LESER.
Winter and Spring terms, T. Th., at an hour to be appointed.
30. Studies in the recent German Drama. Professor OSTHAUS.
Fall term, M. W. F., at an hour to be appointed.
28. Journal Club. This course is introductory to the work of the German Seminary. Members make reports upon the contents of current numbers of journals devoted to German literature and philology, and are trained in the use of important works of reference. Two to five hours' credit. Professor Vos.
Fall term, two hours weekly, at an hour to be appointed.
22. German Seminary: Goethe as a Lyric Poet. Conducted mainly in German. Two to five hours' credit. Professor Vos.
Winter and Spring terms, two hours weekly, at an hour to be appointed.
Open to students who have completed Course 28.
27. Middle High German. Outline of the phonology, accidence and syntax. Reading of selections from the lyric poets, the popular and court epic. Professor Vos.
Fall and Winter terms, two hours weekly, at an hour to be appointed.
29. History of the German Language. The relation of German to other Germanic languages; the dialectic divisions of Modern German; origins of the literary language; changes since the middle period; history of German orthography. Conducted partly in German. Professor Vos.

Spring term, two hours weekly, at an hour to be appointed.

Behaghel, 'Die deutsche Sprache' ('Das Wissen der Gegenwart', Band 54).

DEPARTMENT OF COMPARATIVE PHILOLOGY

*GUIDO H. STEMPERL, Associate Professor.

C. EVERETT CONANT, Acting Associate Professor.

The graduate courses offered below will be extended as required. They may be supplemented by certain of the courses listed as undergraduate, as well as by certain courses given in the other language Departments and in History, Social Science (Anthropology), Philosophy, and English. The time that can profitably be spent here in graduate study in Philology is at present about two years.

The collection of American, British, and German periodicals devoted to Indo-European philology is practically complete.

The more elementary courses of the Department are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue.

5. Comparative Philology of the Classical Languages. An advanced course in the science of language and Indo-European philology. Each student will emphasize the particular language in which he has had special training. Associate Professor CONANT.

Fall, Winter, and Spring terms, M. W. F., at 10:00.

Giles, 'Manual of Comparative Philology for Classical Students'.

Open to students who have passed in Courses 2 and 3, and in thirty hours of language, and to advanced students in Latin or Greek.

4. Gothic. Grammar and reading; phonology of the early Germanic languages. Associate Professor CONANT.

Fall, Winter, and Spring terms, T. Th., at 10:00.

Wright, 'Primer of the Gothic Language'.

Open to students who have passed in Course 2 and in thirty hours of language, and to others at the option of the instructor.

Given every third year; see Courses 9 and 10.

8. Sanskrit. Grammar and reading; comparative phonology of the languages. Associate Professor CONANT.

Fall, Winter, and Spring terms, M. W. F., at 11:00.

Perry, 'Sanskrit Primer' (or Lanman, 'Sanskrit Reader'); and Whitney, 'Sanskrit Grammar'.

Open to advanced students in Latin or Greek at the option of the instructor.

- [9.] Old High German. Elements of the grammar, reading of selected texts, study of dialectal divergence. The method will be both comparative and historical.

*Absent on leave from August 1, 1911, to August 1, 1912.

Fall, Winter, and Spring terms, T. Th., at 10:00.

Wright, 'Old High German Primer'; Braune, 'Althochdeutsche Grammatik'; Braune, 'Althochdeutsches Lesebuch'.

Open to students on same conditions as Course 4.]

Omitted in 1912-13. Given every third year, following Course 4; see Courses 4 and 10.

- [10. Middle High German. (1) Fall term: Elements of the grammar, reading of easy texts, and study of the development of the German language. (2) Winter and Spring terms: Nibelungenlied, with special study of the popular epic.

Fall, Winter, and Spring terms, T. Th., at 10:00.

Wright, 'Middle High German Primer'; Paul, 'Mittelhochdeutsche Grammatik'; Robertson, 'Der arme Heinrich'; Zarncke, 'Das Nibelungenlied'.

Open to students on same conditions as Course 4.]

Omitted in 1912-13. Given every third year, following Course 9; see Courses 9 and 10.

- [11. Old Norse. Introduction to the language, and the reading of texts that throw light upon the popular literature of England and Germany.

Fall, Winter, and Spring terms, M. W. F., at 10:00.

Sweet, 'Icelandic Primer'; selected texts.

Open to students who have passed in fifteen hours of Germanic philology and to others at the option of the instructor.]

Omitted in 1912-13.

15. Seminary. Some topic in grammatical theory or the development of some English usage will be made the basis of study. Associate Professor CONANT.

Fall, Winter, and Spring terms, W., 2:00 to 3:50.

DEPARTMENT OF ENGLISH

WILL D. HOWE, Professor.

CHARLES J. SEMBOWER, Professor.

HENRY T. STEPHENSON, Associate Professor.

*FRANK AYDELLOTTE, Associate Professor.

RICHARD A. RICE, Assistant Professor.

The Department is prepared to offer research work leading to the A.M. and Ph.D. degrees, in the following periods: Elizabethan literature, the literature of the Seventeenth Century, of the Eighteenth Century, and of the first half of the Nineteenth Century.

The University library contains the chief Society publications; for example, The Early English Text Society, Chaucer Society, Spenser Society, Shakspere (Old and New), Shakespeare Jahrbuch, Huth Library, Malone. Substantial additions are being made each year. Besides these publications, all the principal reviews and journals are received.

*Absent on leave, August 1, 1912, to August 1, 1913.

For the degree of A.M., the candidate should have had in his undergraduate work the equivalent of forty-five hours of English, and should, in his graduate work, pursue a course restricted to three subjects, approved by the Department of English.

For the degree of Ph.D., the candidate will be expected to do at least two full years' work in residence after the degree of A.M. He must be able to read German and French, and to do a piece of independent research which will be acceptable to the Department.

The following courses are open to graduate students in the Department. The more elementary courses are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue.

9. Elizabethan Drama (1557-1625). Associate Professor STEPHENSON.
Fall, Winter, and Spring terms, three hours a week.
16. Shakspere. Associate Professor STEPHENSON.
Fall, Winter, and Spring terms, two hours a week.
33. Literary Criticism. Professor HOWE.
Fall, Winter, and Spring terms, two hours a week.
35. Seminary in Composition. Professor SEMBOWER and Associate Professor STEPHENSON.
Hours and credit to be arranged.
42. Chaucer. Assistant Professor RICE.
Fall, Winter, and Spring terms, two hours a week.
44. The Age of Milton and the Age of Dryden (1625-1700). Professor SEMBOWER.
Fall, Winter, and Spring terms, two hours a week.
45. The Eighteenth Century (1700-1770). Professor HOWE.
Fall, Winter, and Spring terms, two hours a week.
56. Contemporary Drama. Mr. JENKINS.
Fall and Winter terms, two hours a week.

Not more than one-third of the work in English of a candidate for the degree of A.M. in this Department may consist of the courses listed above.

- [17. Metrics. A study of modern English meter.]
Omitted in 1912-13.
- [50. Research Course in Anglo-Saxon Literature. An investigation of sources and authorities; reading of Anglo-Saxon literature. Prerequisite, Comparative Philology 2. Five hours of credit may be secured in this course each term.]
Omitted in 1912-13.

- [51. Research Course in Middle English Literature. Reading of much prose, many romances, and some of the most important poems; study of sources and relationship. It is expected that students who take this course will be able to read Middle English, German, and French. Five hours of credit may be secured in this course each term.]
- Omitted in 1912-13.
52. Elizabethan Literature. Studies in the various forms of literature of the Elizabethan Age; investigation of sources and relationships. The work may deal either with individual authors or special literary forms. A reading knowledge of German and French is required. Five hours of credit may be secured in this course each term. Associate Professor STEPHENSON.
53. Seventeenth Century Literature. A research course in the literature from 1625-1700. Reading knowledge of German and French is required. Five hours of credit may be secured in this course each term. Professor SEMBOWER.
54. Eighteenth Century Literature. Studies in one of the fields of literature—the poetry, the drama, the essay, or the novel. Reading knowledge of German and French is required. Five hours of credit may be secured in this course each term. Professor HOWE and Assistant Professor RICE.
55. Research Studies in the Literature of the Nineteenth Century. Discussion of the various literary forms and study of the relationship between English and contemporary European literature. Reading knowledge of German and French is required. Five hours of credit may be secured in this course each term. Professors HOWE and SEMBOWER.

DEPARTMENT OF HISTORY AND POLITICAL SCIENCE

JAMES A. WOODBURN, Professor of American History and Politics.

SAMUEL B. HARDING, Professor of European History.

AMOS S. HERSHIEY, Professor of Political Science.

THOMAS L. HARRIS, Instructor in History.

LOGAN ESAREY, Research Fellow.

The Department is prepared to offer research work leading to A.M. and Ph.D. degrees, in the following fields: American Colonial History, the American Civil War and Reconstruction and the history of American political parties, English History in the Seventeenth and Nineteenth Centuries, the French Revolution, Diplomatic History, Political Philosophy, International Law, and the History of Indiana during the Middle Period, 1820-1860. In each of these fields good library collections are already at hand, to which constant additions are being made.

The following are among the periodicals and continuation sets at the disposal of advanced students of history and political science:

- American Historical Association, Annual Reports, 1884-
American Historical Review, 1896-
American Journal of International Law, 1907-
American Magazine of Civics, 1894-6.
American Political Science Review, 1905-
Annales des Sciences Politiques, 1899-
Annals of the American Academy of Political Science, 1890-
Annuaire Historique, 1819-50.
Annual Register, 1791-1828.
Archives Diplomatiques, 1905-
Camden Miscellany, 1847-
Camden Society Publications, 1838-
Columbia University Studies in History, Economics, and Public Law, 1891-
Cyclopedic Review of Current History, 1893-1902.
DeBow's Review, 1846-68.
English Historical Review, 1889-
Historical Manuscripts Commission Reports (Great Britain), 1870-
Gulf States Historical Magazine, 1902-04.
Hansard's Parliamentary Debates, 1812-1897.
Harvard Historical Studies, 1896-
Historische Zeitschrift, 1888-
Iowa Journal of History and Politics, 1903-
Johns Hopkins University Studies in History and Political Science, 1883-
Magazine of American History, 1880-93.
Nile's Weekly Register, 1811-49.
Political Science Quarterly, 1886-
La Revolution Française, 1899-
Revue de Droit International et de Legislation Comparée, 1896-
Revue Générale de Droit International et de Legislation Comparée, 1896-
Revue Historique, 1895-
Revue Politique et Littéraire: Revue Bleue, 1880-
Royal Historical Society Transactions, 3d series, 1907-
South Atlantic Quarterly, 1903-
London Times (weekly ed.), 1896-7; 1901-
University of Missouri Studies, 1901-
University of Pennsylvania Publications: Series in Political Economy and
Public Law, 1889-
University of Wisconsin Bulletin: Economics, Political Science, and His-
tory series, 1894-99.
Virginia Magazine of History and Biography, 1894-
William and Mary College Quarterly Historical Magazine, 1902-
Zeitschrift für Völkerrecht und Bundesstaatsrecht, 1906-

Candidates for the degree Ph.D., with History as major subject, will be examined on each of the following fields: (1) Ancient History, with emphasis at the option of the candidate in either Greek

or Roman History; (2) Mediaeval and Modern History, with emphasis in either the mediaeval or the modern field; (3) English History, with emphasis either on the period before 1485, or after that date; and (4) American History, with chief emphasis either on the period before 1783, or after that date. The examination on the special field of the thesis will naturally be more searching than elsewhere.

Following are the courses open to graduate students in this Department. The more elementary courses are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue.

6. English History. Professor HARDING.
Fall, Winter, and Spring terms, M. W. F., at 10:00.
9. Renaissance and Reformation. Professor HARDING.
Fall, Winter, and Spring terms, M. W. F., at 9:00.
22. American Diplomatic History. Mr. HARRIS.
Fall, Winter, and Spring terms, T. Th., at 8:00.
- 23a. Government and Parties of England. Professor HERSHAY.
Fall term, M. W. F., at 11:00.
- 23b. Government and Parties of Continental Europe. Professor HERSHAY.
Winter term, M. W. F., at 11:00.
24. History of Political Ideas and Theory of the State. Professor HERSHAY.
Spring term, M. W. F., at 11:00.
- [13. France in the Middle Ages. A study of the institutions of mediaeval France, and of the processes whereby the feudal type of society was transformed into the modern state. Lectures, collateral reading, and reports on assigned topics. Professor HARDING.
Fall and Winter terms, T. Th., at 11:00.]
Omitted in 1912-13.
16. Historical Method. The principles of historical investigation, with some practice in the use of sources and the preparation of papers. Professor HARDING.
Fall term, T. Th., at an hour to be appointed.
28. American Political Parties. A study of some of the more notable leaders and party programs in the political and constitutional controversies in the national period of American history. Designed to introduce the student to a first-hand knowledge of the materials relating to the leading issues in our national party development. Professor WOODBURN.
Fall, Winter, and Spring terms, T. Th., at 9:00.
29. History of Indiana in the Middle Period of the Nineteenth Century, 1816-1860. A study of the development of the State, its settlement, population, laws, internal improvements, canals, banking system, schools, and social life. Mr. ESAREY.
Fall, Winter, and Spring terms, T. Th., at 11:00.

- 20a. Seminary in English History. Individual research work, under the guidance of the instructor, on some subject connected with modern English history. The results of the investigations are presented from time to time as reports and are finally embodied in papers in form suitable for publication, of which a copy must be left with the Seminary. Professor HARDING.
- Fall, Winter, and Spring terms. Hours for individual conference to be arranged.
- 20c. Seminary in American Constitutional and Political History. In 1911-12 the topics of study related to Indiana in connection with national political history in the decade before the Civil War. Study of sources, reports of investigations, and thesis work. Professor WOODBURN.
- Fall, Winter, and Spring terms, M., at 4:00 to 5:30.
Open to advanced students and graduates.
- 20d. Seminary in International Law and Diplomacy. Research work and the special study of important topics, more especially of present day problems. During recent years such subjects were selected as the Alabama Claims, the Panama Affair, the causes of the Russo-Japanese War, the 'Open Door' policy in China, and the genesis of the Monroe Doctrine. Professor HERSHÉY.
- Fall, Winter, and Spring terms, at hours to be appointed.

DEPARTMENT OF ECONOMICS AND SOCIAL SCIENCE

ULYSSES G. WEATHERLY, Professor of Economics and Social Science.

WILLIAM A. RAWLES, Professor of Political Economy.

CLARENCE J. FOREMAN, Instructor.

JOHN A. LAPP, Lecturer on Social Legislation.

While the graduate work of the Department is primarily intended to cover one year and to lead to the Master's degree, it may in certain cases be extended to cover the requirements for the Doctor's degree. In the following special fields the courses of instruction are ample and the research materials adequate: Economic History, Economic Theory, Money and Finance, Statistics and Statistical Method, Historical and Descriptive Sociology, Sociological Theory, and Social Technology.

The Department library is equipped with full sets of the most important public documents, both state and national, and has complete sets of most of the American, English, French, and German economic periodicals. Advanced students have direct access to these materials, and also to the special collections relating to charitable and correctional institutions. The Department is affiliated with the Charity Organization Society of Indianapolis, with the Social Service Department of the School of Medicine, and with the Legislative Reference Department of the State Library. Through

these agencies properly qualified students are enabled to come into direct contact with the social and economic problems of Indianapolis. Constant use is also made of the statistical materials in the various departments of the State government.

The more elementary courses of the Department are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue.

6. Money, Banking, and the Money Market. Professor RAWLES.
Fall, Winter, and Spring terms, T. Th., at 8:00.
3. Public Finance. Professor RAWLES.
Fall, Winter, and Spring terms, M. W. F., at 8:00.
9. Transportation. Professor RAWLES.
Spring term, M. W. F., at 9:00.
5. Advanced Political Economy. Mr. FOREMAN.
Fall, Winter, and Spring terms, M. W. F., at 11:00.
- 20a. Descriptive Sociology: Social Origins. Professor WEATHERLY.
Fall term, T. Th., at 10:00.
- 20b. Descriptive Sociology: Domestic Institutions. Professor WEATHERLY.
Winter term, T. Th., at 10:00.
- 20c. Descriptive Sociology: Demography. Professor WEATHERLY.
Spring term, T. Th., at 10:00.
- 4a. Social Pathology: Poverty and Charities. Professor WEATHERLY.
Fall term, T. Th., at 11:00.
- 4b. Social Pathology: Crime and Penology. Professor WEATHERLY.
Winter term, T. Th., at 11:00.
- 4c. Social Pathology: Special Problems. Professor WEATHERLY.
Spring term, T. Th., at 11:00.
10. Socialism and Social Reform. Professor WEATHERLY.
Fall term, M. W. F., at 10:00.
- 7a. General Sociology: Social Forces. Professor WEATHERLY.
Winter term, M. W. F., at 10:00.
- 7b. General Sociology: Social Efficiency. Professor WEATHERLY.
Spring term, M. W. F., at 10:00.
- S. Seminary in Economics and Sociology. Professors WEATHERLY and
RAWLES, Mr. FOREMAN and Mr. LAPP.
Fall, Winter, and Spring terms, W., 3:00 to 4:50.
- 8a. Research. Professors WEATHERLY and RAWLES, Mr. FOREMAN and
Mr. LAPP.
Fall, Winter, and Spring terms, at hours to be appointed.

DEPARTMENT OF PHILOSOPHY

ERNEST H. LINDLEY, Professor of Philosophy and Psychology.

WARNER FITE, Professor of Philosophy.

WILLIAM L. BRYAN, Lecturer on Ethics.

MELVIN E. HAGGERTY, Assistant Professor and Director of the Psychological Laboratory.

WILLIAM K. WRIGHT, Acting Assistant Professor.

Following are the courses open to graduate students in the Department. The more elementary courses are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue.

- 34. Psychological Seminary. Professor LINDLEY and Assistant Professor HAGGERTY.
Fall, Winter, and Spring terms, two hours a week.
- 35. Modern Idealism. Professor FITE.
Fall, Winter, and Spring terms, T. Th., at 10:00.
- [36. Advanced Logic and Methods of Science. Professor FITE.
Fall and Winter terms, two hours once a week at a period to be arranged.]
Omitted in 1912-13.
- 5. Advanced Psychology. Professor LINDLEY or Professor FITE.
Fall, Winter, and Spring terms, at hours to be arranged.
- 7. Comparative Psychology. Assistant Professor HAGGERTY.
Fall and Winter terms, M. W. F., at 11:00.
- 8. Psychological Research. Work arranged with individual students.
Professor LINDLEY and Assistant Professor HAGGERTY.
Fall, Winter, and Spring terms, at hours to be arranged.
- 30. Seminary in Applied Psychology. A survey of psychological principles in relation chiefly to business enterprise and industrial processes, and incidentally to various trades and professions. Professor LINDLEY and Assistant Professor HAGGERTY.
Fall, Winter, and Spring terms, two hours a week.

DEPARTMENT OF MATHEMATICS.

SCHUYLER C. DAVISSON, Professor.

DAVID A. ROTHROCK, Professor.

ULYSSES S. HANNA, Associate Professor.

ROBERT D. CARMICHAEL, Assistant Professor.

The graduate courses at present offered by the Department lead to the A.M. and Ph.D. degrees.

The library of the Department, consisting of about 2,300 bound volumes, is located in Room 36, Wylie Hall. The library is open from 8:00 a.m. to 10:00 p.m., for use by students pursuing ad-

vanced work in mathematics. The collection of mathematical books consists of the more important English, French, and German texts and treatises, the collected works of Abel, Bernoulli, Cauchy, Cayley, Clifford, DeMorgan, Gauss, Jacobi, Lagrange, Lie, Möbius, Riemann, Schwartz, Smith, Steiner, and Weierstrass, together with the following sets of periodicals:

- Acta Mathematica. Stockholm, Berlin, Paris. 1882 to date.
- Akademie der Wissenschaften, Sitzungsberichte, Math.—Naturwiss. Klasse. Vienna. Current numbers.
- Akademie der Wissenschaften, Math.—Phys. Klasse. Berlin. Current numbers.
- Akademie van Wetenschappen. Verhandelingen. Amsterdam. Current numbers.
- American Journal of Mathematics. Baltimore. 1878 to date.
- American Mathematical Monthly. Springfield, Mo. 1884 to date.
- Analyst (The). Des Moines, Ia. 1874-1883. Complete.
- Annali di Matematica. Milan. Current numbers.
- Annals of Mathematics. Charlottesville, Va., and Cambridge, Mass. 1884 to date.
- Annales scientifiques de l'Ecole Normale Supérieure. Paris. 1864 to date.
- Archiv der Mathematik und Physik. Leipzig. 1841 to date.
- Archiv für Mathematik og Naturvidenskab. Christiania. Current numbers.
- Atti della Reale Accademia dei Lincei. Rome. Current numbers.
- Bibliotheca Mathematica. Leipzig. Current numbers.
- Bulletin de la Société mathématique de France. Paris. 1872 to date.
- Bulletin de la Société physico-mathématique de Kasan. Kasan. Current numbers.
- Bulletin des Sciences mathématiques. Paris. 1870 to date.
- Bulletin of the American Mathematical Society. New York. 1894 to date.
- Bulletin of the New York Mathematical Society. New York. 1891-1894. Complete.
- Cambridge Mathematical Journal. Cambridge. 1837-1845. Complete.
- Cambridge and Dublin Mathematical Journal. Cambridge. 1846-1854. Complete.
- Educational Times (Mathematical Reprints from the). London. 1863 to date.
- Giornale di Matematiche di Battaglini. Naples. Current numbers.
- Il Bulletino di Matematico. Bologna. Current numbers.
- Jahrbuch über die Fortschritte der Mathematik. Berlin. 1868 to date.
- Jahresbericht der deutschen Mathematiker-Vereinigung. Leipzig. 1892 to date.
- Journal de l'Ecole Polytechnique. Paris. 1795 to date.
- Journal de Mathématiques pures et appliquées (Liouville). Paris. 1836 to date.
- Journal für die reine und angewandte Mathematik (Crelle). Berlin. 1826 to date.
- L'Education Mathématique. Paris. Current numbers.

- L'Enseignement Mathématique. Genève. Current numbers.
- L'Intermédiaire des Mathématiciens. Paris. Current numbers.
- Mathematical Monthly (The). Cambridge, Mass. 1859-1861. Complete.
- Mathematical Magazine. Washington. 1882-1884.
- Mathematical Gazette. London. 1896 to date.
- Mathematical Messenger (The). Ada, Louisiana. 1887-1894.
- Mathematical Review. Worcester. 1896-1897. Complete.
- Mathematical Visitor. Erie, Pa. 1877-1883. Complete.
- Mathematische Annalen. Leipzig. 1869 to date.
- Mathematische und naturwissenschaftliche Berichte aus Ungarn. Leipzig.
Current numbers.
- Mathesis. Ghent. 1881 to date.
- Messenger of Mathematics (The Oxford, Cambridge and Dublin). Cambridge. 1862-1871. Complete.
- Messenger of Mathematics (The). London and Cambridge. 1872 to date.
- Mitteilungen der Mathematischen Gesellschaft in Hamburg. Leipzig. Current numbers.
- Monatshefte für Mathematik und Physik. Vienna. Current numbers.
- Municipal Journal of Engineering. New York. 1905 to date.
- Nachrichten von der Königlichen Gesellschaft der Wissenschaften zu Göttingen: Mathematisch-physikalische Klasse. Berlin. 1873 to date.
- Nouvelles Annales de Mathématiques. Paris. Current numbers.
- Nyt Tidsskrift för Matematik. Copenhagen. Current numbers.
- Proceedings of the Edinburgh Mathematical Society. Edinburgh. 1883 to date.
- Proceedings of the Indiana Academy of Science. Indianapolis. 1891 to date.
- Proceedings of the London Mathematical Society. London. 1865 to date.
- Proceedings of the Mathematical-physical Society of Tokyo. Tokyo. Current numbers.
- Quarterly Journal of Mathematics, Pure and Applied. London. 1857 to date.
- Rendiconti del Circolo Matematico di Palermo. 1884 to date.
- Revista de la Sociedad Matemática Española. Madrid. 1911 to date.
- Revue de Mathématiques Spéciales. Paris. Current numbers.
- Revue Semestrielle des Publications mathématiques. Amsterdam. 1893 to date.
- Sächsische Gesellschaft der Wissenschaften. Berichte. Mathematisch-Physikalische Klasse. Leipzig. Current numbers.
- Science. New York and Lancaster. 1908 to date.
- Sitzungsberichte der Berliner mathematischen Gesellschaft. Berlin. Current numbers.
- Transactions of the American Mathematical Society. New York. 1900 to date.
- Unterrichtsblätter für Mathematik und Naturwissenschaften. Berlin.
Current numbers.
- Zeitschrift für Mathematik und Physik. Leipzig. Current numbers.
- Zeitschrift für mathematischen und naturwissenschaftlichen Unterricht.
Leipzig. Current numbers.

Following are the courses open to graduate students in the Department. The more elementary courses are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in this catalogue.

21. Functions of a Complex Variable. The fundamental operations, conformal representation, stereographic projection and mapping upon the Riemann sphere, many-valued functions, Riemann surfaces. Lectures and reports. Six hours' credit. Professor DAVISSON. Two hours a week, throughout the year.
- [24. Elliptic Integrals and Elliptic Functions. Discussion of elliptic integrals of the three kinds; addition theorems, Jacobi's geometrical proof of addition theorem; Landen's transformation; applications. Four hours' credit. Associate Professor HANNA.] Fall and Winter terms, two days a week.
Omitted in 1912-1913.
- [41. Contact Transformations. A study of Lie's 'Berührungs-Transformationen', including the geometry of the plane, the geometry of the line-elements of space, and the theory of Pfaff's and Monge's equations. Six hours' credit. Professor ROTHRICK.] Fall and Winter terms, three days a week.
Omitted in 1912-1913.
52. Partial Differential Equations. Existence theorems, second order equations, the Fredholm integral equation, boundary value problems, the partial differential equations of physics. Assistant Professor CARMICHAEL.
Fall, Winter, and Spring terms, three hours a week.
53. Functions of an Infinite Number of Variables. Finite and infinite determinants, finite and infinite systems of linear equations, geometry in space of an infinite number of dimensions, integral equations, and expansions of functions. Assistant Professor CARMICHAEL.
Fall, Winter, and Spring terms, three hours a week.
- 20d. Difference Equations. An advanced course. The work will consist principally of reports by students on assigned portions of the literature of difference equations. Assistant Professor CARMICHAEL.
Hours and credit to be arranged.
- [51. Linear Differential Equations. Existence theorems, function-theoretic character of the solutions, special equations, oscillation properties, boundary-value and expansion problems. Lectures and reports. Assistant Professor CARMICHAEL.] Three hours a week, throughout the year; and daily, Summer term, 1912.]
Omitted in 1912-1913.

18. Higher Geometry. Higher plane curves; algebraic surfaces; modern analytic geometry. Coördinate systems, elementary transformations, polar systems, and a general study of algebraic curves and surfaces. Professor ROTHROCK.
Summer, Fall, and Winter terms, three hours a week.
- [30. Theory of Surfaces. Lectures, assigned readings, and reports upon the general theory of surfaces and twisted curves; singularities of surfaces, asymptotic curves, lines of curvature, geodesic lines, and differential geometry are studied. Professor DAVISSON.]
Omitted in 1912-13.
39. Theory of Substitutions. Associate Professor HANNA.
Fall term, three hours a week.
25. Theory of Errors. Associate Professor HANNA.
Winter term, three hours a week.
24. Theory of Functions of a Real Variable. Professor DAVISSON.
- [45. Calculus of Variations. Professor ROTHROCK.
Fall and Winter terms, three hours a week.]
Omitted in 1912-13.
49. Infinitesimal Analysis. An introduction to the theory of functions of a real variable. Assistant Professor CARMICHAEL.
Summer term, 1912, three hours a week.

DEPARTMENT OF MECHANICS AND ASTRONOMY

WILBUR A. COGSHALL, Associate Professor of Astronomy.

DAVID A. DREW, Instructor in Mechanics and Astronomy.

Kirkwood Observatory, completed in 1900, is occupied by the Department. The building contains a library and computing room; a lecture room; dark room; a transit room, in which are a Bamberg universal instrument, a Howard sidereal clock, a mean time chronometer, and a chronograph; a dome twenty-six feet in diameter; and a room of the same size immediately below. In the dome is the refracting telescope, of which the 12-inch objective is by Brashear, and the mounting by Warner and Swasey, of Cleveland. The instrument has a focal length of about 15 feet, and is supplied with eyepieces magnifying from 130 to nearly 1,000 diameters; also with polarizing helioscope, diagonal eyepiece, and an electrically illuminated micrometer; there are both coarse and fine circles in right ascension and declination, the fine circles having reading microscope and electrical illumination.

The Department has in a separate building, a mounting, designed and built by the Department, that carries a 4-inch Browning refractor, a 5-inch portrait lens and an 8-inch parabolic mirror, for the photography of comets, nebulae, etc.

For an account of the Lawrence Fellowship in Astronomy, see page 14.

The Department receives telegraphic bulletins of discoveries made at American and European observatories.

Following are the courses open to graduate students in the Department. The more elementary courses are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue.

14. Orbits of Spectroscopic Binaries. Associate Professor COGSHALL.
Winter term, T. Th., at 2:00.
8. Theoretical Mechanics. Mr. DREW.
Fall, Winter, and Spring terms, M. W. F., at 9:00.
15. Celestial Mechanics. An introductory course. Mr. DREW.
Spring term. M. W. F., at 11:00.
Open to students who have passed in Course 7.
12. Theoretical Astronomy. Integration of equations of motion; computation of orbits and ephemerides. Mr. DREW.
Fall term. Hours and credit to be arranged with each student.
13. Astronomical Research. A limited number of students will be permitted to undertake research work under the supervision of the Department. The equipment is best suited for work in astronomy of precision and celestial photography. Associate Professor COGSHALL and Mr. DREW.
Fall, Winter, and Spring terms. Hours and credit arranged with each student.

DEPARTMENT OF PHYSICS

ARTHUR L. FOLEY, Professor.

ROLLA R. RAMSEY, Associate Professor.

The Department offers a full course leading to the degree of Ph.D.

The supply of apparatus for the presentation of courses in modern experimental physics is fairly complete. The equipment and facilities for work have been largely increased during the past three years, especially in the way of delicate instruments and accurate standards for advanced study.

The Library of the Department of Physics contains about six hundred volumes, exclusive of sets of several journals. The following magazines are on file: 'Annalen der Physik', 'Annales de Chimie et de Physique', 'Beiblätter zu den Annalen der Physik', 'Physikalische Zeitschrift', 'The Electrical World and Engineer', 'The Electrician' (London), 'Journal de Physique', 'The Philosophical Magazine', 'The Physical Review', 'The Proceedings of the Physical Society of London', 'The Proceedings of the Royal Society', 'Le Radium', 'School Science and Mathematics', 'Science

Abstracts' (A and B), 'Scientific American and Supplement', 'The Western Electrician', 'Cassier's Magazine', and 'The Manual Training Magazine'. Students have access also to the journals on file in the general library, and in the libraries of other Departments. Of these may be named: 'The American Journal of Science', 'The Astrophysical Journal', 'The Engineering and Mining Journal', 'The Engineering Magazine', 'Nature', 'Comptes Rendus', and 'Science'.

Following are the courses open to graduate students in the Department. The more elementary courses are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue.

12. The Electromagnetic Theory of Light. Professor Foley.
Fall, Winter, and Spring terms, T. Th., at 9:00.
Wood, 'Optics'.
13. Advanced Mathematical Electricity. Associate Professor RAMSEY.
Fall, Winter, and Spring terms, T. Th., at 8:00.
Webster, 'Electricity and Magnetism'.
34. Sound. Mathematical and physical properties of the vibration of sound-producing bodies, such as strings, rods, plates, air columns, membranes, etc. Assistant Professor DUTCHER.
Fall, Winter, and Spring terms, T. Th., at 10:00.
- 16b. Laboratory Practice in Spectroscopy and Photometry. Associate Professor RAMSEY.
Fall, Winter, and Spring terms, T. Th., at 2:00.
14. Advanced Laboratory Methods and Research. Professor FOLEY.
Fall, Winter, and Spring terms, daily, at 1:00.
22. Current Physical Literature. Professor FOLEY.
Two hours a week throughout the year, at an hour to be appointed.
30. Advanced Theoretical Physics. A critical study of standard treatises and memoirs. Professor FOLEY.
Two hours a week, at a time to be appointed.

DEPARTMENT OF CHEMISTRY

ROBERT E. LYONS, Professor.

LOUIS S. DAVIS, Professor.

OLIVER W. BROWN, Associate Professor.

FRANK C. MATHERS, Assistant Professor.

CLARENCE E. MAY, Assistant Professor.

ALPHEUS R. NEES, Teaching Fellow.

The Department of Chemistry has general, special, and private laboratories, a laboratory room, a lecture room, balance rooms, an incubator room, a stock room, museum, etc. Special laboratories

are provided for electrochemistry, assaying and electric furnace work, organic, inorganic and physiological chemistry, water and gas analysis, spectroscopic analysis. The laboratories comprise eleven large, well-lighted rooms, equipped with workstands, capable of accommodating two hundred and seventy-five students. Each room is provided with fume hoods and air tight registers connected with a ventilating fan for the removal of offensive and poisonous gases.

The general equipment for graduate work, including laboratory and library facilities, has been materially increased during the past year.

Special attention is given to inorganic, organic, physiological, and physical chemistry and to electrochemistry, technical analytical chemistry, and electro-metallurgy.

The graduate work of the Department, leading to the degree A.M. and Ph.D., comprises advanced laboratory, lecture, library and seminary work in the lines indicated above, and special graduate courses described below. A thesis embodying original investigation is required for an advanced degree.

The laboratories for advanced work and the departmental library are open from 8:00 a.m. to 5:00 p.m. There are no classes in the laboratories; each student works independently. A five-hour laboratory course requires two and one-half actual hours of laboratory work daily.

Following are the courses open to graduate students in this Department. The more elementary courses are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue.

19. Physical Chemistry. Laboratory work. Associate Professor BROWN.
22. Electrochemistry. Associate Professor BROWN and Mr. NEES.
Winter term. (A) Lectures, T. Th., at 8:00. (B) Laboratory, M. W. F., 1:00 to 4:50.
23. Electrochemistry. Associate Professor BROWN and Mr. NEES.
Spring term. (A) Lectures, T. Th., at 8:00. (B) Laboratory, M. W. F., 1:00 to 4:50.
29. Storage Batteries. Lectures and laboratory work. Associate Professor BROWN and Mr. NEES.
Fall term.
13. Elementary Metallurgy and Assaying. Lectures and laboratory work. Associate Professor BROWN and Mr. NEES.
Fall term. Lectures, T. Th., at 8:00; laboratory work, F. S., 8:00 to 11:50.

15. Advanced Technical and Engineering Analysis. Laboratory work.
Assistant Professor MATHERS.
Spring term, daily.
32. Gas and Fuel Analysis. Lectures and laboratory work. Assistant Professor MATHERS.
Winter term, three hours a week.
33. Spectrum Analysis and Sugar Analysis. Lectures and laboratory work. Assistant Professor MATHERS.
Fall term, two hours a week.
26. Chemical Engineering. Associate Professor BROWN.
Fall term. Lectures, M. W. F., at 8:00.
14. Seminary. Reports on current literature and special topics. (1)
Fall term: Inorganic Chemistry, Assistant Professor MATHERS.
(2) Winter term: Organic Chemistry. Professor LYONS and Assistant Professor MAY. (3) Spring term: Electrochemistry and Industrial Chemistry. Associate Professor BROWN and Assistant Professor MAY.
Fall, Winter, and Spring terms, Th., at 7:00 p.m.
- 12a. Research in Organic or Physiological Chemistry. Professor LYONS and Assistant Professor MAY.
Fall, Winter, and Spring terms, daily, 8:00 to 5:00.
- 12b. Research in the Chemistry of the Alkaloids. Professor DAVIS.
Fall, Winter, and Spring terms, daily, 8:00 to 5:00.
- 12c. Research in Physical Chemistry and Electrochemistry. Associate Professor BROWN.
Fall, Winter, and Spring terms, daily, 8:00 to 5:00.
- 12d. Research in Inorganic Chemistry. Assistant Professor MATHERS.
Fall, Winter, and Spring terms, daily, 8:00 to 5:00.
- 18c. Advanced Physical Chemistry. Lectures on selected chapters of Physical Chemistry. Associate Professor BROWN.
Spring term, T. Th., at an hour to be arranged.
24. Advanced Electrochemistry and Electro-Metallurgy. (A) Lectures on the design and operation of commercial electric furnaces and on electric furnace processes and products. (B) Advanced laboratory work and research in pure and applied electrochemistry and electro-metallurgy, including investigations in electric furnace work, refining and extraction of metals, electro-synthesis of organic and inorganic compounds, manufacture of storage batteries, and of industrial electrochemical processes. Associate Professor BROWN and Mr. NEES.
Fall, Winter, and Spring terms. Laboratory work, daily, 8:00 to 4:50; lectures, Winter term, F., at 8:00.
Students in this course are recommended to take Physics 10 and 24.
25. Advanced Organic Chemistry. A continuation of Course 6. (A) Lectures and recitations on selected chapters of organic chemistry. (B) Laboratory work or research in synthetic or analytical organic chemistry. Assistant Professor MAY.

(A) Winter and Spring terms, T. Th., 11:00. (B) Fall, Winter, and Spring terms, daily, 8:00 to 4:50.

Cohen, 'Text Book of Organic Chemistry'; Roscoe and Schorlemmer, 'Treatise on Chemistry'; Hammersten, 'Physiological Chemistry'; Hensler-Pond, 'Terpenes'.

Presupposes Courses G, G^c, 7.

31. Advanced Inorganic Chemistry. Laboratory work. The preparation and study of the properties and reactions of the different compounds of the rare and uncommon elements, followed by research. This includes a review of the literature relating to the element that is being studied. Assistant Professor MATHERS.
Fall, Winter, and Spring terms, M. W. F., 8:00 to 4:50.

DEPARTMENT OF GEOLOGY

EDGAR R. CUMINGS, Professor.

JOSHUA W. BEEDE, Associate Professor.

The work offered by the Department, leading to the Ph.D. degree, consists largely of research. Courses 10 and 13 are entirely of this nature. The problems offered for investigation are confined for the most part to stratigraphic geology and paleontology, although several studies in economic and geographic geology have also been published by members of the department.

In stratigraphic geology the subjects covered by the researches of the Department have been concerned chiefly with the Ordovician and Mississippian rocks of Indiana, and with the Upper Carboniferous and Permian rocks of Kansas, Oklahoma, and Texas. In pure paleontology, the Department is especially equipped for the study of problems in the development of Paleozoic Brachiopoda and Bryozoa. Considerable work has already been published in this field.

For the prosecution of researches along the lines indicated above, the Department is adequately equipped. The collections of fossils are especially rich in material from the Ordovician, Silurian, and Mississippian of Indiana, and from the Upper Carboniferous and Permian of Kansas and Texas. The latter collections are among the best in America. A special feature of all these collections is the wealth of screenings containing immature stages of Brachiopoda, Bryozoa, and other fossils.

The laboratory equipment contains the usual apparatus for the preparation of material, and machinery for cutting, grinding and polishing thin sections of fossils. An enlarging and microphotographic camera with special lighting appliances and combinations

of lenses for a wide range of work, is available as an aid in the proper illustration of paleontological material.

The Department receives the principal American and European periodicals dealing with geology, paleontology, and geography.

Following are the courses open to graduate students in the Department. The more elementary courses are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue.

3. Economic Geology. A discussion of the non-metallic materials, such as clays, cement, coal, oil and gas, building stones, etc. Associate Professor BEEDE.
Winter term, daily, at 10:00.
5. Systematic Paleontology. Laboratory study of fossil invertebrates. Professor CUMINGS and Associate Professor BEEDE.
Fall, Winter, and Spring terms, two to five hours, at times to be arranged.
- 5a. Evolution. A study of the geologic factors in evolution; the origin of the oldest faunas; age of the earth, etc. Professor CUMINGS.
Winter term, at an hour to be arranged.
10. Research. Investigation of geological and paleontological problems. A careful report on each investigation is required, in proper form for publication. Professor CUMINGS and Associate Professor BEEDE.
Fall, Winter, and Spring terms, daily, 9:00 to 4:50.
13. Advanced Field Work. Continuous work in the field for a month or more in the summer, fall, or spring. This course will usually form part of the research work submitted for an advanced degree. The work must be largely independent, but will always be under the general oversight of a member of the department.
14. Stratigraphic Geology. A study of the literature of the various geologic systems. The history of their investigation, and the present knowledge of their divisions, distribution, faunas, and paleogeography will be fully considered. Professor CUMINGS.
Fall, Winter, and Spring terms. Lectures, T. Th., at 10:00.]
Omitted in 1912-13.

DEPARTMENT OF BOTANY

DAVID M. MOTTIER, Professor.

FRANK M. ANDREWS, Associate Professor.

JAMES M. VAN HOOK, Assistant Professor.

Graduate work leading to the degree of Master of Arts in Botany comprises special studies along some line indicated in the advanced courses enumerated below, or the investigation of some problem of a more limited scope. For the degree of Doctor of

Philosophy, the subject of the thesis is selected from some line of morphology, cytology, physiology, or mycology. Space is provided for four students, and for the work undertaken the equipment is adequate.

The departmental library contains the more necessary works of reference, and the principal botanical journals.

Following are the courses open to graduate students in the Department. The more elementary courses are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue.

4. Morphology of Fungi. Assistant Professor VAN HOOK.
Fall, Winter, and Spring terms, daily, 1:00 to 3:00.
5. Physiology. Associate Professor ANDREWS.
Winter and Spring terms, daily.
6. Cytology. Professor MOTTIER.
Fall, Winter, and Spring terms, daily.
- 5a. Research in Physiology. Special studies will be offered to those pursuing work for advanced degrees. Associate Professor ANDREWS.
Fall, Winter, and Spring terms, daily.
7. Research in Morphology and Cytology. Problems for special investigation in morphology and cytology will be assigned to students who are prepared to undertake original work. Professor MOTTIER.
Fall, Winter, and Spring terms, daily.
13. Morphology of the Algae. A study of the life-history and of the development of vegetative and reproductive organs in certain algae. The work is confined very largely to fresh-water forms. Professor MOTTIER.
Fall, Winter, and Spring terms, daily.
18. Investigations in Mycology and Plant Pathology. Assistant Professor VAN HOOK.
Fall, Winter, and Spring terms, daily, 1:00 to 3:00.

DEPARTMENT OF ZOOLOGY

CARL H. EIGENMANN, Professor and Director of the Biological Station.
*FERNANDUS PAYNE, Assistant Professor.
WILL SCOTT, Assistant Professor.

Full work leading to the degree Ph.D. is offered in Course 6. It is purely a research course, and offers the widest choice of subjects permitted by the equipment of the Department.

The subjects selected have radiated from two centers. One of these is the problem, or problems, of the freshwater fauna of trop-

*Absent on leave from March 1, 1912, to January 1, 1912.

ical America. At present the Department is engaged in a study of divergent evolution as shown by the tropical American characin fishes.

The Department is well equipped for this work. The most important of the zoölogical collections is the collection of fishes, comprising many thousand specimens. Arrangements have been made for coöperation with various other institutions, by which the largest aggregation in the world of collections of South American fresh-water fishes is available for the monographs in preparation. By special arrangement the collections of Harvard University, made by Professor L. Agassiz and his assistants during the Thayer expedition, and by others, are available for the monograph on the American Characins.

The Department has entered into close relations with the Carnegie Museum of Pittsburg. Under the direction of Dr. W. J. Holland, director of this Museum, Mr. John Haseman, A.M., '07, during 1907-1910, explored the coast rivers of Brazil, Uruguay, and Argentina, between the Rio San Francisco and Buenos Aires. He ascended the Rio Paraguay, crossed to the Guaporé and descended that river and the Rio Madeira to Manaos, on the Amazon, making collections on the way.

From August to December, 1908, Professor Eigenmann, with Mr. S. E. Shideler as volunteer assistant, explored the Demerara, Essequibo, and Potaro rivers of British Guiana. Very extensive collections were made in the lowland, as well as above the Kaieteur, a vertical fall of 741 feet of the Potaro river. The results of the expedition are being published by the Carnegie Museum as reports of the British Guiana Expedition of Indiana University and the Carnegie Museum. The final report on the fishes is in press.

From January to April, 1912, Professor Eigenmann made collections along the Atrato, Cauca, and Magdalena rivers in Colombia.

The second center of departmental interest has been, and is, the subject of heredity, especially: (A) The history of the Sex Cells, (B) Variation, (C) The rate of ontogenetic and phylogenetic modification of the sense organs of Cave Animals, (D) Experimental Zoölogy.

For the study of cave animals (C) the facilities of the Department are ideal. The University is located at the edge of the great cave region. By act of the Legislature, the Donaldson estate near Mitchell, Indiana, has been placed in the keeping of the trustees of Indiana University. On it are situated numerous sinkholes, dry

caves, and an underground water-course at least two miles long. This underground river is rich in blind fishes and other blind aquatic animals. A small laboratory has been erected on the farm, and is in charge of a research fellow, appointed from year to year. In the study of cave animals the Department has in the past had the coöperation of the Carnegie Institution, the American Association for the Advancement of Science, and the Elizabeth Thompson Science Fund.

For the study of variation (B) in non-migratory vertebrates in a 'unit of environment' this Department organized and has since maintained a fresh-water Biological Station. It is at present located on Winona Lake, Kosciusko County, Indiana, in the grounds of the Winona Assembly. The Station owns, as a gift of the Winona Assembly, two buildings, 20 x 45 feet, each two stories high. The buildings are on the lake front, at the mouth of Cherry Creek. The Station also owns boats, nets, sounding and temperature apparatus, glassware, etc. Microscopes and other needed apparatus are moved to the Station from the University.

For the study of sex cells (A), and Experimental Zoölogy (D), the Department owns all the necessary apparatus and the surroundings of the University offer an abundance of material. The Department also owns a collection gathered in the vicinities of Jackson, Miss., Salt Lake City, Los Angeles, Tucson, El Paso, and San Antonio.

Following are the courses open to graduate students in the Department. The more elementary courses are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue.

3. Advanced Zoölogy. Professor EIGENMANN and Assistant Professors PAYNE and SCOTT.
Fall, Winter, and Spring terms, five hours a week.
4. General Biological Problems: (A) The development of the idea of evolution and Darwinism; (B) The laws of heredity. Professor EIGENMANN.
Spring term, daily, at 9:00.
5. Seminary. Weekly meetings of advanced students and instructors to discuss current literature and report on investigations in progress. Professor EIGENMANN and Assistant Professor PAYNE.
Fall, Winter, and Spring terms, M., at 4:00.
6. Research. Special investigation of zoölogical problems, with a report on each investigation. Branches in which subjects have in the past been selected and reported upon are Variation, Degeneration, Regeneration, Sense Organs, Embryology, Faunal and

Systematic Studies of Fishes. Ecology of Cave and Freshwater Animals. Cell and Chromosome Studies. For a fuller statement, see the general statement of the Department. Professor EIGENMANN and Assistant Professor PAYNE.

Fall, Winter, and Spring terms, daily, 8:00 to 4:50.

7. Biological Survey. A continuation of the previous work in the physical and biological features of Winona Lake and its environs. Professor EIGENMANN.

Summer term, at the Biological Station.

DEPARTMENT OF ANATOMY

BURTON D. MYERS, Professor.

AUGUSTUS G. POHLMAN, Professor.

Following are the courses open to graduate students in the Department. The more elementary courses are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue.

13. Research Work. Opportunity for research work is offered to advanced students who may have at least one-half their time for one year free for the work. Professors MYERS and POHLMAN.

Fall, Winter, and Spring terms, at hours to be appointed.

15. Advanced Course in Anatomy. Open to students who have completed the dissection of the human body, Course 8, and desire to do special or advanced work. Professors MYERS and POHLMAN.

Fall, Winter, and Spring terms, at hours to be appointed.

PHYSIOLOGY

WILLIAM J. MOENKHAUS, Professor.

Facilities for research leading to the higher degrees are available within restricted lines in general physiology.

Following are the courses open to graduate students in the Department. The more elementary courses are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue.

6. Advanced Physiology. Professor MOENKHAUS.

Fall, Winter, and Spring terms, at hours to be arranged.

10. Research. Problem work in certain phases of general physiology may be taken by those properly equipped. Professor MOENKHAUS.

Fall, Winter, and Spring terms, daily, 8:00 to 4:50.

EDUCATION

WALTER A. JESSUP, Dean of the School of Education, and Professor of School Administration.

WILLIAM W. BLACK, Professor of Elementary Education.

ELMER E. JONES, Professor of the History and Philosophy of Education.

HENRY LESTER SMITH, Lecturer on Education.

Graduate work is offered in the School of Education, and special programs leading to the A.M. and Ph.D. degrees, with the Master's and Doctor's certificates of Education, will be arranged on application.

A student whose undergraduate major was in another department will usually be given opportunity to do in one year the work for the A.M. degree in Education. The work will include such undergraduate courses in Education as may be necessary as a basis for graduate work.

In the future, as in the past, the best work of students in the courses in research work will be published.

Following are the courses open to graduate students in the School. The more elementary courses are not here listed; for these or for fuller statements of the courses below, see the bulletin of the School of Education, or under that heading in the University catalogue.

8. Secondary Education in Germany, France, and England. Professor JESSUP.
Fall, Winter, and Spring terms, M. W. F., at 9:00.
6. History of Education. Professor JONES.
Fall, Winter, and Spring terms, T. Th., at 8:00.
10. Philosophy of Education. Professor JONES.
Fall, Winter, and Spring terms, M. W. F., at 8:00.
15. School Administration. Professor JESSUP.
Fall, Winter, and Spring terms, M. W. F., at 10:00.
- 16a. Educational Seminary. Professor JONES.
Fall, Winter, and Spring terms, T., at 7:00 p.m.
- 16b. Seminary in Social Education. Professor JESSUP.
Fall, Winter, and Spring terms, W., at 7:00 p.m.
- 16c. Educational Seminary. Elementary Education. Professor BLACK.
Fall, Winter, and Spring terms, M., at 7:00 p.m.
17. Advanced Educational Psychology.
Fall, Winter, and Spring terms, T. Th., at 9:00.
9. Orthogenics. Professor JONES.
Fall, Winter, and Spring terms, T. Th., at 3:00.
11. Principles of Organization and Supervision. Development of the law and principles that control the organization and conduct of the

school. The law evolving the school. The curriculum under its logical and psychological aspects; the basis for making a course of study; comparison of typical courses. Universal method in teaching. The organization of a subject. The organic relation of the logical, esthetic, and ethical ends in education. Professor BLACK.

Fall, Winter, and Spring terms, T. Th., at 10:00.

Open to Graduate students, and to teachers of wide experience.

18. Research in Education.

- a. The Problems of the Elementary School. Professor BLACK.
- b. The History and Philosophy of Education. Professor JONES.
- c. The Psychology of the Processes of Education.
- d. Secondary Education. Professor JESSUP.
- e. School Administration. Professor JESSUP.

Problems and hours to be arranged with professors in charge.

Indiana University comprises the following schools:

The College of Liberal Arts,
The School of Education,
The Graduate School,
The School of Law,
The School of Medicine.

The following publications are issued annually by the University:

The University Catalogue,
The Spring Term Bulletin,
The Summer Term Bulletin,
Bulletin of the College of Liberal Arts,
Bulletin of the School of Education,
Bulletin of the Graduate School,
Bulletin of the School of Law,
Bulletin of the School of Medicine.

Any of these publications will be sent free upon application to

THE REGISTRAR, INDIANA UNIVERSITY,

Bloomington, Indiana.

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VOL. XI, No. 2

APRIL 15, 1913

INDIANA UNIVERSITY BULLETIN



GRADUATE SCHOOL 1913

Entered as second-class mail matter May 16, 1908, at the post-office at Bloomington,
Indiana, under act of Congress of July 16, 1894

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University Calendar

SUMMER TERM, 1913

<i>June 19, Thursday.</i>	Registration and enrollment for the Summer term.
<i>June 20, Friday.</i>	Recitations and lectures begin for the First half-term. (Instruction five days a week.)
<i>July 30, Wednesday.</i>	First half-term ends.
<i>July 31, Thursday.</i>	Recitations and lectures begin for Second half-term. (Instruction six days a week.)
<i>Sept. 3, Wednesday.</i>	Summer term ends.

FALL TERM, 1913-14

<i>Sept. 25, Thursday.</i>	Registration and enrollment in classes for the Fall term.
<i>Sept. 26, Friday.</i>	Recitations and lectures begin.
<i>Nov. 27 and 28, Thursday and Friday.</i>	Thanksgiving recess.
<i>Dec. 19, Friday.</i>	Fall term ends.

WINTER TERM, 1913-14

<i>Jan. 2, Friday.</i>	Registration and enrollment in classes for the Wintern term.
<i>Jan. 5, Monday.</i>	Recitations and lectures begin.
<i>Jan. 20, Tuesday.</i>	Foundation day, a holiday.
<i>Mar. 26, Thursday, 6 p. m.</i>	Winter term ends.

SPRING TERM, 1913-14

<i>Apr. 1, Wednesday.</i>	Registration and enrollment in classes for the Spring term.
<i>Apr. 2, Thursday.</i>	Recitations and lectures begin.
<i>June 20, Saturday, 6 p. m.</i>	Spring term ends.
<i>June 24, Wednesday.</i>	University Commencement.

INDIANA UNIVERSITY BULLETIN

VOL. XI

BLOOMINGTON, IND., APRIL 15, 1913

NO. 2

Entered as second-class mail matter May 16, 1908, at the post-office at Bloomington, Indiana, under the Act of July 16, 1894. Published from the University office, Bloomington, Indiana, semi-monthly April, May, and June, and monthly January, February, March, July, September, and November.

Prefatory Note

Indiana University, situated at Bloomington, is the State University of Indiana and the head of the public school system of the State. It takes its origin from the State Seminary, which was established by act of the Legislature, approved January 20, 1820. In 1828 the title of the Seminary was changed by the Legislature to that of the Indiana College; and in 1838 the University was given its present name. In 1867 Indiana University became coeducational.

The University comprises the following schools:

The College of Liberal Arts, organized in 1828,
The School of Law, organized in 1842, re-organized in 1889,
The School of Medicine, organized in 1903,
The Graduate School, organized in 1904,
The School of Education, organized in 1908.

The first advanced degrees, conferred for graduate work, were granted in 1882. During the eighties, well defined regulations for graduate work and graduate degrees were stated in the University catalogue, and a considerable number of graduate students were enrolled, especially in the natural sciences. In the years 1882 to 1893, inclusive, the University graduated 14 Doctors of Philosophy, 99 Masters of Arts, and 12 Masters of Science. For some years following 1893, however, the degree of Doctor of Philosophy was not conferred.

In 1904 there took place the segregation and a formal organization of the Graduate School, and in 1908 the office of Dean of the Graduate School was created.

This number of the Bulletin is devoted to setting forth the facilities for graduate work in the several departments of the University. Courses intended primarily for graduate students are

described in full. Brief announcements are given of courses intended for both graduates and undergraduates. For further description of the latter courses, see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue.

The attention of graduates of other Indiana Colleges is invited to the announcement on page 14 of ten fellowships recently established by the Board of Trustees, for such students. The value of these fellowships is \$200 each; they also carry with them exemption from contingent and library fees. For further information concerning the Graduate School, address.

THE DEAN OF THE GRADUATE SCHOOL,

Bloomington, Indiana.

Officers and Faculty of the Graduate School

COUNCIL

CARL H. EIGENMANN, Ph.D., Professor of Zoölogy, Dean of the Graduate School.

JAMES ALBERT WOODBURN, Ph.D., LL.D., Professor of American History and Politics.

ROBERT EDWARD LYONS, Ph.D., Professor of Chemistry.

ARTHUR LEE FOLEY, Ph.D., Professor of Physics.

ALBERT FREDERICK KUERSTEINER, Ph.D., Professor of Romance Languages.

ULYSSES GRANT WEATHERLY, Ph.D., Litt.D., Professor of Economics and Social Science.

ERNEST HIRAM LINDLEY, Ph.D., Professor of Philosophy and Psychology.

BURTON DORR MYERS, A.M., M.D., Professor of Anatomy.

BERT JOHN VOS, Ph.D., Professor of German.

SCHUYLER COLFAX DAVISSON, Sc.D., Professor of Mathematics.

WILLIAM J. MOENKHHAUS, Ph.D., Professor of Physiology.

WILL DAVID HOWE, Ph.D., Professor of English.

ELMER ELLSWORTH JONES, Ph.D., Professor of the History and Philosophy of Education.

EDGAR ROSCOE CUMINGS, Ph.D., Professor of Geology.

FRANK WILLIAM TILDEN, A.M., Associate Professor of Greek.

LILLIAN GAY BERRY, A.M., Associate Professor of Latin.

WILBUR ADELMAN COGHILL, A.M., Associate Professor of Astronomy.

GUIDO HERMAN STEMPLE, Ph.D., Associate Professor of Comparative Philology.

JAMES M. VAN HOOK, A.M., Assistant Professor of Botany.

FACULTY

WILLIAM LOWE BRYAN, Ph.D., LL.D., President of the University.

HORACE ADDISON HOFFMAN, A.M., Professor of Greek.

JAMES ALBERT WOODBURN, Ph.D., LL.D., Professor of American History and Politics.

CARL H. EIGENMANN, Ph.D., Professor of Zoölogy, and Director of the Biological Station.

ROBERT EDWARD LYONS, Ph.D., Professor of Chemistry.

ARTHUR LEE FOLEY, Ph.D., Professor of Physics.

DAVID MYERS MOTTIER, Ph.D., Professor of Botany.

ALBERT FREDERICK KUERSTEINER, Ph.D., Professor of Romance Languages.

ULYSSES GRANT WEATHERLY, Ph.D., Litt.D., Professor of Economics and Social Science.

ERNEST HIRAM LINDLEY, Ph.D., Professor of Philosophy and Psychology.

BURTON DORR MYERS, A.M., M.D., Professor of Anatomy.

SAMUEL BANNISTER HARDING, Ph.D., Professor of European History.

AMOS SHARTLE HERSHIEY, Ph.D., Professor of Political Science and International Law.

- *BERT JOHN VOS, Ph.D., Professor of German.
WILLIAM A. RAWLES, Ph.D., Professor of Political Economy.
CARL WILHELM FERDINAND OSTHAUS, A.M., Professor of German.
SCHUYLER COLFAX DAVISSON, Sc.D., Professor of Mathematics.
DAVID ANDREW ROTHROCK, Ph.D., Professor of Mathematics.
WILLIAM J. MOENKHAUS, Ph.D., Professor of Physiology.
LOUIS SHERMAN DAVIS, Ph.D., Professor of Chemistry.
WARNER FITE, Ph.D., Professor of Philosophy.
WILL DAVID HOWE, Ph.D., Professor of English.
AUGUSTUS GROTE POHLMAN, M.D., Professor of Anatomy.
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EDGAR ROSEOF CUMINGS, Ph.D., Professor of Geology.
WILLIAM FREDERICK BOCK, Ph.D., Professor of Educational Psychology.
GEORGE DAVIS MORRIS, Doct. d'Univ. (Paris), Associate Professor of French.
FRANK WILLIAM TILDEN, A.M., Associate Professor of Greek.
GUIDO HERMAN STEMPLE, A.M., Associate Professor of Comparative Philology.
CHARLES ALFRED MOSEMILLER, A.B., Associate Professor of Romance Languages.
ROLLA ROY RAMSEY, Ph.D., Associate Professor of Physics.
OLIVER W. BROWN, A.M., Associate Professor of Chemistry.
FRANK MARION ANDREWS, Ph.D., Associate Professor of Botany.
LILLIAN GAY BERRY, A.M., Associate Professor of Latin.
HENRY THI EW STEPHENSON, A.B., Associate Professor of English.
FRANK AYDELLOTTE, A.M., B.Litt., Associate Professor of English.
WILBUR ADELMAN COGSHALL, A.M., Associate Professor of Astronomy.
ULYSSES SHERMAN HANNA, Ph.D., Associate Professor of Mathematics.
JOSHUA WILLIAM BEEDE, Ph.D., Associate Professor of Geology.
FRANK GREENE BATES, Ph.D., Associate Professor of Economics.
FRANK CURRY MATLIERS, Ph.D., Associate Professor of Chemistry.
CLARENCE EARL MAY, Ph.D., Assistant Professor of Chemistry.
ROBERT DANIEL CARMICHAEL, Ph.D., Associate Professor of Mathematics.
MELVIN EVERETT HAGGERTY, Ph.D., Associate Professor of Philosophy.
FERNANDUS PAYNE, Ph.D., Associate Professor of Zoölogy.
EUGENE LESER, Ph.D., Assistant Professor of German.
JAMES M. VAN HOOK, A.M., Assistant Professor of Botany.
JOHN BENJAMIN DUTCHER, A.M., Assistant Professor of Physics.
RICHARD ASHLEY RICE, A.M., Assistant Professor of English.
ERNEST HENRY BIERMANN, A.M., Assistant Professor of German.
JOTILDA CONKLIN, A.M., Assistant Professor of French.
WILL SCOTT, Ph.D., Assistant Professor of Zoölogy.
ROBERT E. BURKE, Assistant Professor of Fine Arts.
FRED A. MOLBY, Ph.D., Assistant Professor of Physics.

*Absent on leave from August 1, 1913, to August 1, 1914.

†Absent on leave from August 1, 1912, to August 1, 1913.

General Statement of the Graduate School

Purpose and Administration. The Graduate School furnishes opportunities for advanced work leading to careers in higher education and in certain lines of investigation. It does not offer work leading to professional degrees in Law or in Medicine.

The work of the School is a direct continuation of that of the College of Liberal Arts; as such it is the most advanced work in education undertaken by the State. The Graduate School stands, therefore, at the head of the University, and is the culmination of the public school system of the State.

The school is administered by the Council of the Graduate School. It is composed of members of the Faculty representing different fields of learning.

Not all departments of the University are at present equally equipped for extended graduate work. In recognition of this fact, the amount of graduate work offered by the different departments varies. Some departments offer work for the A.M. degree only, while others offer work leading to the degree of Ph.D.

Admission. Students holding a bachelor's degree in Arts or in Science from Indiana University, or the same degree or its equivalent from institutions of equal rank, are admitted to the Graduate School on presentation of the proper credentials. Persons holding the bachelor's degree from institutions whose requirements are considered to lack a year or more of being the equivalent of the A.B. degree from this institution, are not admitted to the Graduate School. They may enter the College of Liberal Arts, and are referred to the Dean of the College for their standing. Holders of the A.B. degree or its equivalent from institutions whose requirements lack less than a year of being the equivalent of the A.B. degree from this institution, may be admitted to the Graduate School. In such cases, work in addition to the minimum of forty-five hours for the A.M. degree will be required. The amount will be determined in each case by the Council of the Graduate School.

All graduate students will enroll at the beginning of each term, and those entering regularly organized classes will submit to the same regulations as undergraduate students. Work will in many cases be individual and not controlled by a recitation schedule. At

the time of entrance to the Graduate School, the student must submit a plan of the entire work he wishes to present for the master's or doctor's degree. This plan must be approved by the professor of the major subject and the Dean of the Graduate School. Graduate work done before filing such plan will ordinarily not be counted toward advanced degrees.

Fees. Students who are legal residents of the State of Indiana are charged a contingent fee of five dollars a term, and a library fee of one dollar a term.

These fees cover in part the cost of the physical maintenance of the University, and are not applied to the cost of tuition, which is provided wholly by the State.

Students not legal residents of the State of Indiana, will be charged a contingent and library fee amounting to twenty dollars a term. For each Summer half-term, half the fee will be charged. This fee is in lieu of the regular library and contingent fees noted above.

The laboratory fees in all courses are uniformly one dollar per credit hour.

The gymnasium fee, if the work in physical training is taken, is one dollar a term.

An examination fee of one dollar is charged for each make-up or special examination. This fee is paid to the Bursar; his receipt when presented to the proper instructor constitutes the authorization for holding the examination.

The fee for any degree is five dollars, and must be paid to the Bursar at least thirty days before graduation.

The Library. The library of Indiana University at present contains ninety thousand catalogued volumes. The selection of these books has been made with a view to facilitating instruction and research. The collection is a well-balanced one, but is especially strong in literary and scientific periodicals. The list of periodicals received and permanently kept on file by the library numbers about four hundred, and includes American, English, German, French, and, to a less extent, Italian, Spanish, and Swedish publications. The library is made thoroughly usable by a carefully prepared card catalogue, by indexes, and by other bibliographical aids. The library force consists of a librarian and twelve assistants, all of whom are at the service of any authorized user of the library.

In the library building are seminary rooms for the Departments of History, Economics, English, Philosophy, German, Romance Languages, Education, Latin and Greek.

In addition to the central library, where the general literary and historical collections are housed, there are nine departmental collections, of varying sizes, kept in the different University buildings.

All books, with the exception of periodicals and books reserved for reference, may be drawn for home use. Each graduate student may draw five books for two weeks, with privilege of renewal.

The library is open from Monday to Friday from 7:45 a.m. to 10:00 p.m., and on Saturday from 8:00 a.m. to 5:00 p.m.

DEGREES

Three advanced degrees, Master of Arts, Master of Science, and Doctor of Philosophy, are conferred by the University.

Master of Arts. The degree of Master of Arts may be conferred upon Bachelors of Arts of this University, or of any other institution of equivalent standing, or upon Bachelors of Science provided this degree is an alternative equivalent of the A.B. degree, following a residence at the University of a minimum of three terms and the completion of a minimum of forty-five hours of University credit.

Credits earned in excess of those required for the A.B., or the B.S., degrees, before the degree is conferred or a certificate of the completion of the work for the degree is issued, are not counted toward the A.M. degree.

Thirty of the total of forty-five hours required for the A.M. degree must be in one department, or in closely allied departments. Fifteen hours must be distinctly graduate in character. There is no restriction as to the amount of work that may be carried during any term.

Graduates of this University may be given leave of absence for one term of the required year to pursue a specific investigation.

The work for the A.M. degree may all be done in Summer terms, or half-terms, provided that not more than four half-terms be so counted and that the work for the degree be completed within five years.

Professional studies are not accepted for the graduate degrees, but research work on professional subjects may be accepted for these degrees at the option of the professor in charge of the major subject.

A thesis is required in all departments *except that of Latin.*

Freshmen courses shall not be counted on advanced degrees,

except by permission of the professor in charge of the major subject, who shall, in such cases, fix the amount of credit to be received.

Master of Science. The degree of Master of Science may be conferred upon Bachelors of Science of Indiana University under the same conditions upon which the degree of Master of Arts is conferred on Bachelors of Arts.

Doctor of Philosophy. The degree of Doctor of Philosophy may be conferred upon graduates of this University, or of any institution of similar character and rank, upon the completion of an advanced course of study of not less than three years.

Each candidate for this degree will select a major subject consisting of the work of some one department or recognized subdivision of a department; and not less than two minors, at least one of which must be in some department related to, but distinct from that of the major subject.

The course for the degree will be pursued under the direction of a committee consisting of the heads of the departments in which the work is done. Its value will be determined by a final examination, and by the presentation of a satisfactory thesis. The thesis should usually embody original work upon some prescribed, or accepted, subject; it must always give evidence that the candidate is capable of forming an independent judgment upon the recent literature of his department.

A detailed statement of the work offered for the degree, indorsed by the professor in charge of the major subject, must be submitted to the Council of the Graduate School, not later than May 10 of the year in which the candidate presents himself for examination.

On the recommendation of the professor in charge of the major subject, and with the concurrence of the Council of the Graduate School, part of the three years' study required for this degree may be spent in residence at other universities.

The thesis of every candidate for the degree of Doctor of Philosophy shall be presented to the Council of the Graduate School on or before the first day of June of the year in which he is a candidate for the degree. The thesis must be indorsed by the head of the department as being in its final form, and ready for the press. If the candidate is recommended for the degree, arrangements must be made to deposit five printed copies of the thesis in the library.

Examinations of each candidate for this degree will be conducted by a committee consisting of all the instructors under whom

graduate work has been taken, in the presence of such members of the Faculty of the school as care to attend.

At least one year before the final examination the candidate shall satisfy the professor in charge of the major subject of his ability to use French and German for purposes of investigation.

Application for Degrees. Application for advanced degrees must be filed with the Dean at the time of admission to the Graduate School. Application for the degree of Doctor of Philosophy must be on file at least one year before the candidate is admitted to the examination.

FELLOWSHIPS

Teaching Fellowships. A number of teaching fellowships are available for graduate students.

A Teaching Fellow is relieved from all term fees, and the fellowship carries with it an honorarium of between \$200 and \$500 annually. The highest amount will ordinarily be paid only if the incumbent is appointed for a third year. A Teaching Fellowship is primarily a recognition of scholarship. A portion of his time will be required in the service of the department in which he is appointed; but not less than two-thirds of each Fellow's time must be devoted to work leading to the Doctorate in Philosophy.

Appointments are for one year, and do not necessarily imply a reappointment.

Donaldson Fellowship in Zoölogy. The Donaldson Fellowship in Zoölogy, of the value of \$500, is open to students who are in large measure capable of doing independent work in biological subjects. The fellowship implies residence for twelve months at the cave farm of the State at Mitchell, Indiana. A certain amount of supervising work is required of the incumbent.

Lawrence Fellowship in Astronomy. The Lawrence Fellowship of the Department of Mechanics and Astronomy has been established by Mr. Percival Lowell, of the Lowell Observatory, upon the following terms and conditions:

1. The fellowship shall be known as the Lawrence Fellowship, in remembrance of the donor's mother, and is established in perpetuity, revocable, however, at any time at the will of the founder.

2. It shall be annually available and shall cover the college calendar year, that is, from commencement to commencement of the same.

3. The applicant shall be appointed by the Department, the donor reserving the right of finally passing upon the suitability of the candidate so presented.

4. The Fellow shall be given time and opportunity for an original thesis on some astronomical subject looking to the taking of a Master's degree, the nature of which shall be decided by the Director and the Fellow. But the Fellow shall be expected to give general assistance in the work of the observatory during the period of his fellowship.

5. The Fellowship will pay \$600 and the Fellow's traveling expenses to and from the Observatory at Flagstaff, Ariz.; and a furnished room at the Observatory shall be free to the Fellow's use.

Fellowships for Graduates of Other Indiana Colleges. The Trustees of Indiana University, at their March meeting, 1910, established ten Graduate Fellowships of an annual value of \$200 each, with exemption from term fees, to be held by graduates of other colleges in the State. In awarding these fellowships the policy will be to assign them to the most promising students, irrespective of the special field of study in which they wish to work, or the particular institutions from which they come. As between cases of equal merit, however, attention will be given to securing a distribution of the awards among different departments of study and different colleges of the State.

Applicants for these fellowships should file a statement of their educational history and of their plans with the Dean of the Graduate School. They should indicate in this statement the major subject which they wish to pursue, and give a transcript of their college record. They should also present at this time recommendations from their instructors, and such other evidences of their fitness as they can offer. Applications will be received up to April 1 of each year.

Applications will be referred in each case to the department concerned for a decision upon the respective merits of the applicants in that department. On the basis of the departmental reports, the Graduate Council will recommend to the Trustees the most eligible candidates for appointment.

These fellowships are not open to students doing professional work in law or in medicine.

Incumbents will not ordinarily be eligible for reappointment, but they will be eligible for appointment to teaching fellowships.

For application blanks, and further information, address the Dean of the Graduate School.

Research Fellowships. There are, besides the fellowships mentioned above, research fellowships, which are awarded to students who have shown marked ability and who desire to investigate definite problems in which they are interested. Each case is de-

cided on its merits. The compensation is fixed by the Beard of Trustees, on the recommendation of the Graduate Council.

Special Rules Concerning Fellows. Holders of fellowships are not permitted, without the special permission of the Graduate Council, to do work for remuneration outside the University.

UNIVERSITY ORGANIZATIONS

The Graduate Club. The Graduate Club was founded in 1910 to establish closer relations among the graduate students, and between graduate students and the members of the Faculty. Through closer association and acquaintanceship, the club aims to foster solidarity of interest. The meetings are in part social, and in part devoted to the presentation of papers by the members of the club, giving the results of some investigation carried on by the author. In this way students in the different departments are made acquainted with the work in various lines of research carried on in the University. Occasionally addresses are given by visitors of prominence. Membership in the club is open to all graduate students.

Sigma Xi. Sigma Xi is an organization especially for scientific students. It is a chapter of a national scientific fraternity, to which members of the faculty, graduate students, and seniors may be elected. Its object is to encourage investigation in science, pure and applied.

Phi Beta Kappa. Phi Beta Kappa is a chapter of the oldest Greek-letter fraternity, founded in 1776 for "the promotion of scholarship and friendship among students and graduates of American colleges." It is today no longer a secret society, but an honor society, having for its special aim the encouragement of liberal culture. At Indiana University, a certain number of seniors, not over ten per cent, are elected each year, partly at Thanksgiving and partly at Commencement. The membership includes also certain members of the faculty, and a few others chosen directly from the ranks of the alumni. The chapter was established on Foundation Day, 1911.

Departmental Clubs. The following departments have special departmental clubs: Geology, Zoölogy, Physics, Chemistry, History, Philosophy, English, Mathematics, German, French, Spanish, and Comparative Philology. Membership in these clubs is open to faculty members of the department, graduate students, and undergraduates. The purpose of the clubs is to discuss topics of interest to members, and to promote social intercourse.

Departments and Graduate Courses of Instruction, 1913-14

* * * In the following list are included many courses which are open alike to graduates and advanced underclassmen. Only a skeleton announcement of these is here made; for full description see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue. Strictly graduate courses are described in full. The more elementary courses are not listed here at all.

DEPARTMENT OF GREEK

HORACE A. HOFFMAN, Professor.

FRANK W. TILDEN, Associate Professor.

The time that at the present may be profitably devoted to graduate work in Greek is one year, leading to the degree of A.M. A thesis on some subject connected with the seminary work of the year is required for the degree.

All candidates for A.M., with Greek as major subject are recommended to take at least fifteen hours in Latin, in advance of the Latin taken in the undergraduate study.

Courses 9, 12, and 13, or any part of these courses, are also open as minors to graduate students who have not already had as part of their undergraduate study the work which they take in their courses for graduate credit.

The Department is well equipped for doing satisfactory work leading to the degree of Master of Arts. Besides the most important reference books, cyclopedias, dictionaries, lexicons, indexes, and standard editions of Greek writers, an effort has been made to build up an especially good collection of works treating of Euripides, since seminary work is generally given in that author. The Department has the chief older editions as well as nearly all of the later ones, and many special works bearing on Euripides.

The Library contains the most important classical journals, among them complete sets of 'The American Journal of Philology'; 'The American Journal of Archaeology'; 'The Classical Review'; Chicago, Cornell, and Harvard 'Studies'; 'Hermes'; 'Jahrbücher für classische Philologie'; 'Mitteilungen d. deutsch. arch. Inst. in Athen'; 'Philologus'; 'Rheinisches Museum'; 'Journal of Hellenic Studies'.

Among the most valuable works in the field of archaeology and

art the following may be named: 'Antike Denkmäler'; 'Ausgrabungen von Olympia'; 'Carapanos'; 'Dodona'; Hamdey-Bey and Reinach's 'Néropole à Sidon'; Homolle's 'Fouilles de Delphes'; Ohnefalsch-Richter's 'Cypros, die Bibel und Homer'; Overbeck's 'Griechische Kunstmystologie'; Staekelberg's 'Die Gräber der Hellenen'; Fenger's 'Dorische Polychromie'; Hawe's 'Gournia'; Penrose's 'Principles of Athenian Architecture'; and the publications of the American and British Schools of Athens, and of the Egyptian Exploration Fund. Among the works on inscriptions and epigraphy the following may be mentioned: 'Corpus Inscriptionum Graecarum'; 'Corpus Inscriptionum Atticarum'; 'Inscr. Graec. Septentrionalis, Italiae, Pelopon., Insularum, etc.,' 'Die Inschriften von Priene', Die Inschriften von Pergamon, and the important writings of such authorities as Klein, Kretschmer, Meisterhans, etc. For palaeography and the study of the papyri, the following are accessible: Grenfell, Hunt, Kenyon, Mahaffy, Mayer, Mitteis, Thompson, and Wilkin. In the important field of vase-painting, the Library contains many valuable works. Among the most noteworthy are: Benndorf's 'Griechische und Sisilische Vasenbilder'; Collignon and Rayet's 'Histoire de la Céramique grecque'; Dechelette's 'Les Vases céramiques ornés de la Gaule romaine'; Furtwängler and Loeschke's 'Mykenische Vasen,' and 'Mykenische Thongefäße'; Furtwängler and Reichhold's 'Griechische Vasenmalerei'; Harrison and McColl's 'Types of Greek Vases,' and various books by Gardner, Huddleston, Klein, Kretschmer, Murray, Smith, and Walters.

The Department also owns upwards of 900 photographs of landscapes, buildings, and works of art in Greece, Italy, and Sicily; and has many lantern-slides, busts, casts, a model of the Acropolis at Athens, and a series of reproductions of the famous Tanagra Figurines.

Following are the courses open to graduate students in the Department. The more elementary courses are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue:

9. Lyric and Dramatic Poetry. Associate Professor TILDEN.
Fall, Winter, and Spring terms, daily, at 9:00.
12. Philosophical Prose. Professor HOFFMAN.
Fall, Winter, and Spring terms, T. Th., at 10:00.
- [13. Historical and Rhetorical Prose. Associate Professor TILDEN.
Fall, Winter, and Spring terms, M. W. F., at 10:00.] Not given in 1913-14.

15a. Graduate Seminary. Euripides is the author usually studied, but others authors may be selected. In 1912-13 Plato's Republic was the work studied. Professor HOFFMAN.

Fall, Winter, and Spring terms, Th., at hours to be appointed.

15b. Graduate Seminary: In 1912-13 Ideal Forms of Government were studied from Plato to modern times. Associate Professor TILDEN. Fall, Winter, and Spring terms, F., at hours to be appointed.

DEPARTMENT OF LATIN

LILLIAN GAY BERRY, Associate Professor.

The work of the Department leading to investigation lies in the fields of Latin Literature, Roman Institutions, Epigraphy, Textual Criticism, Latin Syntax, and the Topography and Monuments of Ancient Rome. In addition to the promotion of pure scholarship, the work is intended to meet the needs of those making the teaching of Latin in high schools and colleges their profession, whether or not they are candidates for a degree, not by instruction in pedagogical methods, but by a deepening of their knowledge of and a quickening of their interest in Latin.

Students entering upon the graduate study of Latin must previously have completed the courses required of a Major in the Department, or their equivalent. Courses 28 and 32 will be required of all students who are graduates of institutions which do not offer similar courses as a part of the undergraduate preparation. If Courses 33 or 35, or both, have been taken in the undergraduate Course, Course 34 should be made a part of the graduate work, and vice versa.

A continuous year of residence is advisable for profitable graduate work, but in special cases approved by the Department, the work for the A.M. degree may be done in three summers.

Following are courses open to graduate students in the Department: The more elementary courses are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue.

28. Paleography and Criticism. An introduction to the use of critical editions of Latin authors. In 1912-13 a special study has been made of the first book of Caesar's 'Gallic War'. This course is recommended to persons expecting to teach Latin, and will be required after this date of students admitted to the third year with advanced standing from other colleges. Mr. MENK.

Fall, Winter, and Spring terms, T., at 10:00.

Johnston, 'Latin Manuscripts'; Meusel, 'Caesar'; Meusel (or Menge Preuss) 'Lexicon'.

32. Epigraphy. Recitations, occasional lectures, and the reading of some five hundred Latin inscriptions. Associate Professor BERRY.
Fall, Winter, and Spring terms, T., at 9:00.
Egbert, 'Latin Inscriptions'.
- [33. The Prose Writers of the Republic. Selections from Cato, Sallust, Cicero, and Hirtius, with the critical study of the text of one of these authors so far as it is read in the class.
Courses 33 and 34 are given in alternate years.]
Omitted in 1912-13.
34. The Poets of the Republic. Selections from Plautus, Terence, Lucretius, and Catullus, with the critical study of the text of some one of these authors so far as read in the class. Students are expected to be able to read German.
Fall, Winter, and Spring terms, M. W. F., at 9:00.
35. Latin of the Empire. Selections from Tacitus, Suetonius, Juvenal, and Martial will be studied with reference to their portrayal of political and social conditions under the Early Empire. Associate Professor BERRY.
Fall, Winter, and Spring terms, at 11:00.
41. Topography and Monuments of Ancient Rome. Recitations, lectures, and assigned readings. Associate Professor BERRY.
Fall, Winter, and Spring terms, once a week, at an hour to be arranged.
Platner, 'Ancient Rome'.
Open to graduate students only.
42. Readings in Latin Literature. The work in this course varies from year to year. It includes wide reading in authors of all periods, together with the first hand investigation of some problem connected with the line of reading being followed. In 1912-13 a study has been made of the Latin Romance, its origin and history; and characteristics as shown in Petronius and Apuleius. Associate Professor BERRY.
Fall, Winter, and Spring terms, T., 2:00 to 3:50.
Open to graduate students only.
43. Advanced Composition. This course is intended especially for teachers, but may be taken by any persons who need practice in writing Latin. Mr. MENK.
Fall, Winter, and Spring terms, once a week, at an hour to be arranged.
Open to graduates and teachers of Latin.
50. Seminary. The critical study of the text of some standard author, with incidental investigation of problems in syntax, style, prosody, and so forth. In past years, Caesar, Sallust, Tacitus, and Plautus have been made the subjects of similar work. In 1911-12 a study of Terence was made.
Fall, Winter, and Spring terms, M., 2:00 to 3:50.
Open to graduate students only.

DEPARTMENT OF ROMANCE LANGUAGES

ALBERT F. KUERSTEINER, Professor of Romance Languages.

GEORGE D. MORRIS, Associate Professor of French.

CHARLES A. MOSEMILLER, Associate Professor of Romance Languages.

The Department of Romance Languages offers one year of graduate work, leading to the degree of M.A.

The Library is well equipped with works in French criticism and with texts of the eighteenth century, and has a fair selection of other works of modern French literature. It contains, also, all of the volumes so far published by the 'Société des anciens textes français', and a good collection of French grammars and dictionaries. The following periodical publications are on file:

Archiv für das Studium der neueren Sprachen und Literaturen.

Bibliothek des litterarischen Vereins in Stuttgart.

Euphorion.

Französische Studien.

Germanisch-Romanische Monatsschrift.

Literaturblatt für germanische und romanische Philologie.

Modern Language Notes.

Medern Language Review.

Modern Philology.

Publications of the Modern Langnage Association of America.

Revue Bleue.

Revue de Cours et Conférences.

Revue des deux Mondes.

Reyne des Langnes Romanes.

Revue de Paris.

Revue de Philologie française et de Littérature.

Romania.

Zeitschrift für französische Sprache und Litteratur.

Zeitschrift für romanische Philologie.

Following are the courses open to graduate students in the Department. The more elementary courses are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue:

17. Seventeenth Century Poetry and Drama. Professor KUERSTEINER.
Fall, Winter, and Spring terms, M. W. F., at 9:00.]
Omitted in 1913-14.
24. Eighteenth Century Poetry and Drama. Professor KUERSTEINER.
Fall, Winter, and Spring terms, M. W. F., at 9:00.
30. Nineteenth Century: The Romantic Period. Associate Professor MORRIS.
Fall, Winter, and Spring terms, M. W. F., at 10:00.

- [27. Nineteenth Century. The Realistic Period. Associate Professor MORRIS.
 Fall, Winter, and Spring terms, M. W. F., at 10:00.]
 Omitted in 1913-14.
- [32. Contemporary Fiction. Associate Professor MORRIS.
 Fall, Winter, and Spring terms, T. Th., at 10:00.]
- [33. Contemporary Drama. Associate Professor MORRIS.
 Fall, Winter, and Spring terms, T. Th., at 10:00.]
 Omitted in 1913-14.
26. Advanced Composition. Associate Professor MOSEMILLER.
 Fall, Winter, and Spring terms, T. Th., at 2:00.
13. Old French. Reading of texts; study of Old French phonology and morphology; exercises in tracing words from classical and from popular Latin to Modern French. Lectures. Associate Professor MOSEMILLER.
 Fall, Winter, and Spring terms, M. W. F., at 11:00.
 Paris, 'Extraits de la Chanson de Roland'; Suchier, 'Aucassin et Nicolet' (French edition); Constans, 'Chrestomathie de l'ancien français'; Paris-Langlois, 'Chrestomathie du moyen-âge'; Paris-Langlois, 'Extraits des chroniqueurs français'.
 Open to students who have studied French and Latin.

DEPARTMENT OF GERMAN

BERT J. VOS, Professor.

CARL W. F. OSTHAUS, Professor.

EUGENE LESER, Assistant Professor.

In combination with the Department of Comparative Philology, which gives courses in Gothic, Old High German, and Old Norse, the Department at present offers about thirty-five hours of graduate work. Students entering upon the graduate study of German must previously have completed the courses required for a major in the Department, or their equivalent. Courses 27 and 29 are, however, open to students of other departments than German upon the completion of the work of the Junior year. The library is well equipped with books for the special study of Classical and Nineteenth Century German literature.

The list of complete sets of periodicals and of current publications received includes the following, those marked with an asterisk representing complete sets:

Alemannia.

Allgemeine Zeitung. München.

**Archiv für das Studium der neueren Sprachen und Literaturen.*

**Archiv für Litteraturgeschichte.*

- *Arkiv för nordisk Filologi.
- *Beiträge zur Geschichte der deutschen Sprache und Literatur.
- *Bibliothek des litterarischen Vereins in Stuttgart.
- *Columbia University Germanic Studies.
- Das Litterarische Echo.
- *Euphorion.
- *Forschungen zur neueren Litteraturgeschichte, herausgegeben von F. Muncker.
- German-American Annals.
- *Germanisch-Romanische Monatsschrift.
- *Goethe Jahrbuch.
- *Indogermanische Forschungen.
- Jahrbuch des freien deutschen Hochstifts.
- *Jahrbuch der Grillparzer Gesellschaft.
- Jahrbuch des Vereins für niederdeutsche Sprachforschung.
- *Jahresbericht über die Erscheinungen auf dem Gebiete der Germanischen Philologie.
- *Jahresberichte für neuere deutsche Litteraturgeschichte.
- *Journal of English and Germanic Philology.
- Korrespondenzblatt des Vereins für niederdeutsche Sprachforschung.
- *Literaturblatt für germanische und romanische Philologie.
- *Modern Language Notes.
- *Modern Language Review.
- *Modern Philology.
- *Monatshefte für deutsche Sprache und Pädagogik.
- *Publications of the Modern Language Association of America.
- *Quellen und Forschungen.
- *Revue germanique.
- *Veröffentlichungen des Schwäbischen Schiller Vereins.
- *Vierteljahrsschrift für Litteraturgeschichte.
- Zeitschrift des Allgemeinen deutschen Sprachvereins.
- *Zeitschrift des Vereins für Volkskunde.
- Zeitschrift für Bücherfreunde.
- *Zeitschrift für deutsches Altertum.
- Zeitschrift für deutsche Mundarten.
- *Zeitschrift für deutsche Philologie.
- Zeitschrift für den deutschen Unterricht.
- *Zeitschrift für deutsche Wortforschung.
- Zeitschrift für die österreichischen Gymnasien.
- *Zeitschrift für vergleichende Litteraturgeschichte.

For Gothic and Old High German, see Courses 4 and 9 of the Department of Comparative Philology.

Following are the courses open to graduate students in the Department. The more elementary courses are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue:

14. German Usage. Assistant Professor LÆSER.
Winter and Spring terms, T. Th., at an hour to be appointed.
30. Studies in the recent German Drama. Professor OSTHAUS.
Fall term, M. W. F., at an hour to be appointed.
28. Journal Club. This course is introductory to the work of the German Seminary. Members make reports upon the contents of current numbers of journals devoted to German literature and philology, and are trained in the use of important works of reference. Two to five hours' credit. Professor Vos.
Fall term, two hours weekly, at an hour to be appointed.
22. German Seminary: Goethe as a Lyric Poet. Conducted mainly in German. Two to five hours' credit. Professor Vos.
Winter and Spring terms, two hours weekly, at an hour to be appointed.
Open to students who have completed Course 28.
27. Middle High German. Outline of the phonology, accidence and syntax. Reading of selections from the lyric poets, the popular and court epic. Conducted in German. Professor Vos.
Fall and Winter terms, two hours weekly, at an hour to be appointed.
29. History of the German Language. The relation of German to other Germanic languages; the dialect divisions of Modern German; origins of the literary language; changes since the middle period; history of German orthography. Conducted in German. Professor Vos.
Spring term, two hours weekly, at an hour to be appointed.
Behaghel, 'Die deutsche Sprache' ('Das Wissen der Gegenwart', Band 54).

DEPARTMENT OF COMPARATIVE PHILOLOGY

GUIDO H. STEMPERL, Associate Professor.

Course 8 will be given by Mr. EDGAR A. MENK of the Department of Latin.

The graduate courses offered below will be extended as required. They may be supplemented by certain of the courses listed as undergraduate, as well as by certain courses given in the other language Departments and in History, Social Science (Anthropology), Philosophy, and English. The time that can profitably be spent here in graduate study in Philology is at present about two years.

The collection of American, British, and German periodicals devoted to Indo-European philology is practically complete.

The more elementary courses of the Department are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue.

5. Comparative Philology of the Classical Languages. An advanced course in the science of language and Indo-European philology. Each student will emphasize the particular language in which he has had special training. Associate Professor STEMPLE.
- Fall, Winter, and Spring terms, M. W. F., at 10:00.
 Giles, 'Manual of Comparative Philology for Classical Students'. Open to students who have passed in Courses 2 and 3, and in thirty hours of language, and to advanced students in Latin or Greek.
4. Gothic. Grammar and reading; phonology of the early Germanic languages.
- Fall, Winter, and Spring terms, T. Th., at 10:00.
 Wright, 'Primer of the Gothic Language'. Open to students who have passed in Course 2 and in thirty hours of language, and to others at the option of the instructor. Given every third year; see Courses 9 and 10. Not given in 1913-14. Given every third year, follow Course 10; see Courses 9 and 10.
8. Sanskrit. Grammar and reading; comparative phonology of the languages. Mr. MENK.
- Fall, Winter, and Spring terms, M. W. F., at 10:00.
 Perry, 'Sanskrit Primer' (or Lanman, 'Sanskrit Reader'); and Whitney, 'Sanskrit Grammar'. Open to advanced students in Latin or Greek at the option of the instructor.
9. Old High German. Elements of the grammar, reading of selected texts, study of dialectal divergence. The method will be both comparative and historical. Associate Professor STEMPLE.
- Fall, Winter, and Spring terms, T. Th., at 10:00.
 Wright, 'Old High German Primer'; Braune, 'Althochdeutsche Grammatik'; Braune, 'Althochdeutsches Lesebuch'. Open to students on same conditions as Course 4. Given every third year, following Course 4; see Courses 4 and 10.
10. Middle High German. (1) Fall term: Elements of the grammar, reading of easy texts, and study of the development of the German language. (2) Winter and Spring terms: Nibelungenlied, with special study of the popular epic.
- Fall, Winter, and Spring terms, T. Th., at 10:00.
 Wright, 'Middle High German Primer'; Paul, 'Mittelhochdeutsche Grammatik'; Robertson, 'Der arme Heinrich'; Zarucke, 'Das Nibelungenlied'. Open to students on same conditions as Course 4.] Omitted in 1912-13. Given every third year, following Course 9; see Courses 4 and 9.
11. Old Norse. Introduction to the language, and the reading of texts that throw light upon the popular literature of England and Germany.
- Fall, Winter, and Spring terms, M. W. F., at 10:00.
 Sweet, 'Icelandic Primer'; selected texts.

Open to students who have passed in fifteen hours of Germanic philology and to others at the option of the instructor.]
Omitted in 1912-13.

15. Seminary. Some topic in grammatical theory or the development of some English usage will be made the basis of study. Associate Professor STEMPLE.
- Fall, Winter, and Spring terms. W., 2:00 to 3:50.

DEPARTMENT OF ENGLISH

WILL D. HOWE, Professor.

CHARLES J. SEMBOWER, Professor.

HENRY T. STEPHENSON, Associate Professor.

FRANK AYDELLOTTE, Associate Professor.

RICHARD A. RICE, Assistant Professor.

The Department is prepared to offer research work leading to the A.M. and Ph.D. degrees, in the following periods: Elizabethan literature, the literature of the Seventeenth Century, of the Eighteenth Century, and of the first half of the Nineteenth Century.

The University library contains the chief Society publications; for example, The Early English Text Society, Chaucer Society, Spenser Society, Shakspere (Old and New), Shakespeare Jahrbuch, Huth Library, Malone. Substantial additions are being made each year. Besides these publications, all the principal reviews and journals are received.

For the degree of A.M., the candidate should have had in his undergraduate work the equivalent of forty-five hours of English, and should, in his graduate work, pursue a course restricted to three subjects, approved by the Department of English.

For the degree of Ph.D., the candidate will be expected to do at least two full years' work in residence after the degree of A.M. He must be able to read German and French, and to do a piece of independent research which will be acceptable to the Department.

The following courses are open to graduate students in the Department. The most elementary courses are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue.

9. Elizabethan Drama (1557-1625). Associate Professor STEPHENSON.
Fall, Winter, and Spring terms, three hours a week.
16. Shakspere. Associate Professor STEPHENSON.
Fall, Winter, and Spring terms, two hours a week.
33. Literary Criticism. Professor HOWE.
Fall, Winter, and Spring terms, two hours a week.

35. Seminary in Composition. Professor SEMBOWER and Associate Professor STEPHENSON.
Hours and credit to be arranged.
42. Chaucer. Associate Professor AYDELOTTE.
Fall, Winter, and Spring terms, two hours a week.
44. The Age of Milton and the Age of Dryden (1625-1700). Professor SEMBOWER.
Fall, Winter, and Spring terms, three hours a week.
45. The Eighteenth Century (1700-1770). Assistant Professor RICE.
Fall, Winter, and Spring terms, two hours a week.
56. Contemporary Drama. Mr. JENKINS.
Fall and Winter terms, two hours a week.

Not more than one-third of the work in English of a candidate for the degree of A.M. in this Department may consist of the courses listed above.

17. Metrics. A study of modern English meter. Assistant Professor RICE.
50. Research Course in Anglo-Saxon Literature. An investigation of sources and authorities; reading of Anglo-Saxon literature. Prerequisite, Comparative Philology 2. Five hours of credit may be secured in this course each term.]
Omitted in 1913-14.
51. Research Course in Middle English Literature. Reading of much prose, many romances, and some of the most important poems; study of sources and relationship. It is expected that students who take this course will be able to read Middle English, German, and French. Five hours of credit may be secured in this course each term.]
Omitted in 1913-14.
52. Elizabethan Literature. Studies in the various forms of literature of the Elizabethan Age; investigation of sources and relationships. The work may deal either with individual authors or special literary forms. A reading knowledge of German and French is required. Five hours of credit may be secured in this course each term. Associate Professor AYDELOTTE.
53. Seventeenth Century Literature. A research course in the literature from 1625-1700. Reading knowledge of German and French is required. Five hours of credit may be secured in this course each term. Professor SEMBOWER.
54. Eighteenth Century Literature. Studies in one of the fields of literature—the poetry, the drama, the essay, or the novel. Reading knowledge of German and French is required. Five hours of credit may be secured in this course each term. Professor HOWE and Assistant Professor RICE.

55. Research Studies in the Literature of the Nineteenth Century. Discussion of the various literary forms and study of the relationship between English and contemporary European literature. Reading knowledge of German and French is required. Five hours of credit may be secured in this course each term. Professors HOWE and SEMBOWER.

DEPARTMENT OF HISTORY AND POLITICAL SCIENCE

JAMES A. WOODBURN, Professor of American History and Politics.

SAMUEL B. HARDING, Professor of European History.

AMOS S. HERSHIEY, Professor of Political Science.

The Department is prepared to offer research work leading to A.M. and Ph.D. degrees in the following fields: American Colonial History, the American Civil War and Reconstruction and the history of American political parties, English History in the Seventeenth and Nineteenth Centuries, the French Revolution, Diplomatic History, Political Philosophy, International Law, and the History of Indiana during the Middle Period, 1820-1860. In each of these fields good library collections are already at hand, to which constant additions are being made.

The following are among the periodicals and continuation sets at the disposal of advanced students of history and political science:

- American Historical Association, Annual Reports, 1884-
American Historical Review, 1896-
American Journal of International Law, 1907-
American Magazine of Civics, 1894-6.
American Political Science Review, 1905-
Annales des Sciences Politiques, 1899-
Annals of the American Academy of Political Science, 1890-
Annuaire Historique, 1819-50.
Annual Register, 1791-1828.
Archives Diplomatiques, 1905-
Camden Miscellany, 1847-
Camden Society Publications, 1838-
Columbia University Studies in History, Economics, and Public Law, 1891-
Cyclopedic Review of Current History, 1893-1902.
DeBow's Review, 1846-68.
English Historical Review, 1889-
Historical Manuscripts Commission Reports (Great Britain), 1870-
Gulf States Historical Magazine, 1902-04.
Hansard's Parliamentary Debates, 1812-1897.
Harvard Historical Studies, 1896-
Historische Zeitschrift, 1888-
Iowa Journal of History and Politics, 1903-

Johns Hopkins University Studies in History and Political Science, 1883-
Magazine of American History, 1880-93.
Nile's Weekly Register, 1811-49.
Political Science Quarterly, 1886-
La Revolution Française, 1899-
Revue de Droit International et de Legislation Comparée, 1896-
Revue Générale de Droit International et de Legislation Comparée, 1896-
Revue Historique, 1895-
Revue Politique et Littéraire: Revue Bleue, 1880-
Royal Historical Society Transactions, 3d series, 1907-
South Atlantic Quarterly, 1903-
London Times (weekly ed.), 1896-7; 1901-
University of Missouri Studies, 1901-
University of Pennsylvania Publications: Series in Political Economy and
Public Law, 1889-
University of Wisconsin Bulletin: Economics, Political Science, and His-
tory series, 1894-99.
Virginia Magazine of History and Biography, 1894-
William and Mary College Quarterly Historical Magazine, 1902-
Zeitschrift für Völkerrecht und Bundesstaatsrecht, 1906-

Candidates for the degree Ph.D., with History as major subject, will be examined on each of the following fields: (1) Ancient History, with emphasis at the option of the candidate in either Greek or Roman History; (2) Mediaeval and Modern History, with emphasis in either the mediaeval or the modern field; (3) English History, with emphasis either on the period before 1485, or after that date; and (4) American History, with chief emphasis either on the period before 1783, or after that date. The examination on the special field of the thesis will naturally be more searching than elsewhere.

Following are the courses open to graduate students in this Department. The more elementary courses are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue.

6. English History. Professor HARDING.
Fall, Winter, and Spring terms, M. W. F., at 10:00.
9. Renaissance and Reformation. Professor HARDING.
Fall, Winter, and Spring terms, T. Th., at 11:00.
22. American Diplomatic History.
Fall, Winter, and Spring terms, T. Th., at 8:00.
- 23a. Government and Parties of England. Professor HERSHLEY.
Fall term, M. W. F., at 11:00.
- 23b. Government and Parties of Continental Europe. Professor HERSHLEY.
Winter term, M. W. F., at 11:00.

24. History of Political Ideas and Theory of the State. Professor HERSHHEY.
Spring term, M. W. F., at 11:00.
143. France in the Middle Ages. A study of the institutions of mediaeval France, and of the processes whereby the feudal type of society was transformed into the modern state. Lectures, collateral reading, and reports on assigned topics. Professor HARDING.
Fall and Winter terms, T. Th., at 11:00.]
Omitted in 1912-13.
16. Historical Method. The principles of historical investigation, with some practice in the use of sources and the preparation of papers. Professor HARDING.
Fall term, T. Th., at an hour to be appointed.
28. American Political Parties. A study of some of the more notable leaders and party programs in the political and constitutional controversies in the national period of American history. Designed to introduce the student to a first-hand knowledge of the materials relating to the leading issues in our national party development. Professor WOODBURN.
Fall, Winter, and Spring terms, T. Th., at 9:00.
29. History of Indiana in the Middle Period of the Nineteenth Century, 1816-1860. A study of the development of the State, its settlement, population, laws, internal improvements, canals, banking system, schools, and social life. Mr. ESAREY.
Fall, Winter, and Spring terms, T. Th., at 11:00.
- 20a. Seminary in English History. Individual research work, under the guidance of the instructor, on some subject connected with modern English history. The results of the investigations are presented from time to time as reports and are finally embodied in papers in form suitable for publication, of which a copy must be left with the Seminary. Professor HARDING.
Fall, Winter, and Spring terms. Hours for individual conference to be arranged.
- 20c. Seminary in American Constitutional and Political History. In 1911-12 the topics of study related to Indiana in connection with national political history in the decade before the Civil War. Study of sources, reports of investigations, and thesis work. Professors WOODBURN and HARDING, and Mr. ESAREY.
Fall, Winter, and Spring terms, M., at 4:00 to 5:30.
Open to advanced students and graduates.
- 20d. Seminary in International Law and Diplomacy. Research work and the special study of important topics, more especially of present day problems. During recent years such subjects were selected as the Alabama Claims, the Panama Affair, the causes of the Russo-Japanese War, the 'Open Door' policy in China, and the genesis of the Monroe Doctrine.
Fall, Winter, and Spring terms, at hours to be appointed.

DEPARTMENT OF ECONOMICS AND SOCIAL SCIENCE

ULYSSES G. WEATHERLY, Professor of Economics and Social Science.

WILLIAM A. RAWLES, Professor of Political Economy.

FRANK G. BATES, Associate Professor of Economics and Social Science.

JOHN A. LAPP, Lecturer on Social Legislation.

While the graduate work of the Department is primarily intended to cover one year and to lead to the Master's degree, it may in certain cases be extended to cover the requirements for the Doctor's degree. In the following special fields the courses of instruction are ample and the research materials adequate: Economic History, Economic Theory, Money and Finance, Statistics and Statistical Method, Historical and Descriptive Sociology, Sociological Theory, Social Technology, and Municipal Problems.

The Department library is equipped with full sets of the most important public documents, both state and national, and has complete sets of most of the American, English, French, and German economic periodicals. Advanced students have direct access to these materials, and also to the special collections relating to charitable and correctional institutions. The Department is affiliated with the Charity Organization Society of Indianapolis, with the Social Service Department of the School of Medicine, and with the Legislative Reference Department of the State Library. Through these agencies properly qualified students are enabled to come into direct contact with the social and economic problems of Indianapolis. Constant use is also made of the statistical materials in the various departments of the State government.

The more elementary courses of the Department are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue.

6. Money, Banking, and the Money Market. Associate Professor BATES.
Fall, Winter, and Spring terms, T. Th., at 8:00.
3. Public Finance. Associate Professor BATES.
Fall, Winter, and Spring terms, M. W. F., at 8:00.
9. Transportation. Professor RAWLES.
Spring term, M. W. F., at 9:00.
5. Advanced Political Economy. MR. FOREMAN.
Fall, Winter, and Spring terms, M. W. F., at 11:00.
11. Municipal Problems. Associate Professor BATES.
Fall, Winter, and Spring terms, T. Th., at 11:00.
31. Economic and Social Legislation. Associate Professor BATES and MR. LAPP.
Fall, Winter, and Spring terms, M. W. F., at 11:00.

- 20a. Descriptive Sociology. Social Origins. Professor WEATHERLY.
Fall term, T. Th., at 10:00.
- 20b. Descriptive Sociology: Domestic Institutions. Professor WEATHERLY.
Winter term, Th., at 10:00.
- 20c. Descriptive Sociology: Demography. Professor WEATHERLY.
Spring term, T. Th., at 10:00.
- 4a. Social Pathology: Poverty and Charities. Professor WEATHERLY.
Fall term, M. W. F., at 10:00.
- 4b. Social Pathology: Crime and Penology. Professor WEATHERLY.
Winter term, M. W. F., at 10:00.
- 4c. Social Pathology: Special Problems. Professor WEATHERLY.
Spring term, M. W. F., at 10:00.
10. Socialism and Social Reform. Professor WEATHERLY.
Fall term, T. Th., at 11:00.
- 7a. General Sociology: Social Forces. Professor WEATHERLY.
Winter term, T. Th., at 11:00.
- 7b. General Sociology: Social Efficiency. Professor WEATHERLY.
Spring term, T. Th., at 11:00.
8. Seminary in Economics and Sociology. Professors WEATHERLY and
RAWLES, Associate Professor BATES, Mr. FOREMAN and Mr. LAPP.
Fall, Winter, and Spring terms, W., 3:00 to 4:50.
- 8a. Research. Professors WEATHERLY and RAWLES, Associate Professor
BATES, Mr. FOREMAN and Mr. LAPP.
Fall, Winter, and Spring terms, at hours to be appointed.

DEPARTMENT OF PHILOSOPHY

ERNEST H. LINDLEY, Professor of Philosophy and Psychology.

WARNER FITE, Professor of Philosophy.

WILLIAM L. BRYAN, Lecturer on Ethics.

MELVIN E. HAGGERTY, Associate Professor and Director of the Psychological Laboratory.

Following are the courses open to graduate students in the Department. The more elementary courses are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue.

34. Psychological Seminary. Professor LINDLEY and Assistant Professor HAGGERTY.
Fall, Winter, and Spring terms, two hours a week.
35. Modern Idealism. Professor FITE.
Fall, Winter, and Spring terms, T. Th., at 10:00.
- [36. Advanced Logic and Methods of Science. Professor FITE.
Fall and Winter terms, two hours once a week at a period to be arranged.]
Omitted in 1912-13.

5. Advanced Psychology. Professor LINDLEY or Professor FITE. Fall, Winter, and Spring terms, at hours to be arranged.
7. Comparative Psychology. Assistant Professor HAGGERTY. Fall and Winter terms, M. W. F., at 11:00.
8. Psychological Research. Work arranged with individual students. Professor LINDLEY and Assistant Professor HAGGERTY. Fall, Winter, and Spring terms, at hours to be arranged.
30. Seminary in Applied Psychology. A survey of psychological principles in relation chiefly to business enterprise and industrial processes, and incidentally to various trades and professions. Professor LINDLEY and Assistant Professor HAGGERTY. Fall, Winter, and Spring terms, two hours a week.

DEPARTMENT OF MATHEMATICS

SCHUYLER C. DAVISSON, Professor.
 DAVID A. ROTHRICK, Professor.
 ULYSSES S. HANNA, Associate Professor.
 ROBERT D. CARMICHAEL, Associate Professor.

The graduate courses at present offered by the Department lead to the A.M. and Ph.D. degrees.

The library of the Department, consisting of about 2,300 bound volumes, is located in Room 36, Wylie Hall. The library is open from 8:00 a.m. to 10:00 p.m., for use by students pursuing advanced work in mathematics. The collection of mathematical books consists of the more important English, French, and German texts and treatises, the collected works of Abel, Bernoulli, Cauchy, Cayley, Clifford, DeMorgan, Gauss, Jacobi, Lagrange, Lie, Möbius, Riemann, Schwartz, Smith, Steiner, and Weierstrass, together with the following sets of periodicals:

Acta Mathematica., Stockholm, Berlin, Paris. 1882 to date.
Akademie der Wissenschaften, Sitzungsberichte, Math.—Naturwiss. Klasse. Vienna. Current numbers.
Akademie der Wissenschaften, Math.—Phys. Klasse. Berlin. Current numbers.
Akademie van Wetenschappen, Verhandelingen. Amsterdam. Current numbers.
American Journal of Mathematics. Baltimore. 1878 to date.
American Mathematical Monthly. Springfield, Mo. 1884 to date.
Analyst (The). Des Moines, Ia. 1874-1883. Complete.
Annali di Matematica. Milan. Current numbers.
Annals of Mathematics. Charlottesville, Va., and Cambridge, Mass. 1884 to date.
Annales scientifiques de l'École Normale Supérieure. Paris. 1864 to date.
Archiv der Mathematik und Physik. Leipzig. 1844 to date.

- Archiv für Mathematik og Naturvidenskab. Christiania. Current numbers.
- Arkiv för Matematik, Astronomi och Fysik. Stockholm. Current number.
- Atti della Reale Accademia dei Lincei. Rome. Current numbers.
- Bibliotheca Mathematica. Leipzig. Current numbers.
- Bulletin de la Société mathématique de France. Paris. 1872 to date.
- Bulletin de la Société physico-mathématique de Kasan. Kasan. Current numbers.
- Bulletin des Sciences mathématiques. Paris. 1870 to date.
- Bulletin of the American Mathematical Society. New York. 1894 to date.
- Bulletin of the New York Mathematical Society. New York. 1891-1894. Complete.
- Cambridge Mathematical Journal. Cambridge. 1837-1845. Complete.
- Cambridge and Dublin Mathematical Journal. Cambridge. 1846-1854. Complete.
- Educational Times (Mathematical Reprints from the). London. 1863 to date.
- Giornale di Matematiche di Battaglini. Naples. Current numbers.
- Il Bulletinino di Matematico. Bologna. Current numbers.
- Jahrbuch über die Fortschritte der Mathematik. Berlin. 1868 to date.
- Jahresbericht der deutschen Mathematiker-Vereinigung. Leipzig. 1892 to date.
- Journal de l'Ecole Polytechnique. Paris. 1795 to date.
- Journal de Mathématiques pures et appliquées (Liouville). Paris. 1836 to date.
- Journal für die reine und angewandte Mathematik (Crelle). Berlin. 1826 to date.
- L'Education Mathématique. Paris. Current numbers.
- L'Enseignement Mathématique. Genève. Current numbers.
- L'Intermédiaire des Mathématiciens. Paris. Current numbers.
- Mathematical Monthly (The). Cambridge, Mass. 1859-1861. Complete
- Mathematical Magazine. Washington. 1882-1884.
- Mathematical Gazette. London. 1896 to date.
- Mathematical Messenger (The). Ada, Louisiana. 1887-1894.
- Mathematical Review. Worcester. 1896-1897. Complete.
- Mathematical Visitor. Erie, Pa. 1877-1883. Complete.
- Mathematische Annalen. Leipzig. 1869 to date.
- Mathematische und naturwissenschaftliche Berichte aus Ungarn. Leipzig. Current numbers.
- Mathesis. Ghent. 1881 to date.
- Messenger of Mathematics (The Oxford, Cambridge and Dublin). Cambridge. 1862-1871. Complete.
- Messenger of Mathematics (The). London and Cambridge. 1872 to date.
- Mitteilungen der Mathematischen Gesellschaft in Hamburg. Leipzig. Current numbers.
- Monatshefte für Mathematik und Physic. Vienna. Current numbers.
- Municipal Journal of Engineering. New York. 1905 to date.
- Nachrichten von der Königlichen Gesellschaft der Wissenschaften zu Göttingen: Mathematisch-physikalische Klasse. Berlin. 1873 to date.
- Nouvelles Annales de Mathématiques. Paris. Current numbers.

- Nyt Tidsskrift för Matematik. Copenhagen. Current numbers.
- Proceedings of the Edinburgh Mathematical Society. Edinburgh. 1883 to date.
- Proceedings of the Indiana Academy of Science. Indianapolis. 1891 to date.
- Proceedings of the London Mathematical Society. London. 1865 to date.
- Proceedings of the Mathematical-physical Society of Tokyo. Tokyo. Current numbers.
- Quarterly Journal of Mathematics, Pure and Applied. London. 1857 to date.
- Rendiconti del Circolo Matematico di Palermo. 1884 to date.
- Revista de la Sociedad Matemática Española. Madrid. 1911 to date.
- Revue de Mathématiques Spéciales. Paris. Current numbers.
- Revue Semestrielle des Publications mathématiques. Amsterdam. 1893 to date.
- Sächsische Gesellschaft der Wissenschaften. Berichte. Mathematisch-Physikalische Klasse. Leipzig. Current numbers.
- Science. New York and Lancaster. 1908 to date.
- Sitzungesberichte der Berliner mathematischen Gesellschaft. Berlin. Current numbers.
- Transactions of the American Mathematical Society. New York. 1900 to date.
- Unterrichtsblätter für Mathematik und Naturwissenschaften. Berlin. Current numbers.
- Zeitschrift für Mathematik und Physik. Leipzig. Current numbers.
- Zeitschrift für mathematischen und naturwissenschaftlichen Unterricht. Leipzig. Current numbers.

Graduate Courses

Following are the courses open to graduate students in the Department. The more elementary courses are not here listed; for these see the bulletin of the College of Liberal Arts.

21. Theory of Functions. Professor DAVISSON.
Throughout the year, two hours a week.
39. Theory of Groups of Substitutions. Associate Professor HANNA.
Throughout the year, two hours a week.
20. Mathematical Reading and Research. Professors DAVISSON and ROTHROCK, Associate Professors HANNA and CARMICHAEL.
Hours and credits to be arranged.
- 20d. Difference Equations. Associate Professor CARMICHAEL.
Throughout the year, two hours a week.
30. Differential Geometry. Professor ROTHROCK.
Throughout the year, three hours a week.
43. Bessel, Laplace, and Lamé's, Functions. Associate Professor CARMICHAEL.
Throughout the year, three hours a week.
55. Ordinary Differential Equations. Associate Professor CARMICHAEL.
Throughout the year, three hours a week.

DEPARTMENT OF MECHANICS AND ASTRONOMY

WILBUR A. COGSHALL, Associate Professor of Astronomy.

Kirkwood Observatory, completed in 1900, is occupied by the Department. The building contains a library and computing room; a lecture room; dark room; a transit room, in which are a Bamberg universal instrument, a Howard sidereal clock, a mean time chronometer, and a chronograph; a dome twenty-six feet in diameter; and a room of the same size immediately below. In the dome is the refracting telescope, of which the 12-inch objective is by Brashear, and the mounting by Warner and Swasey, of Cleveland. The instrument has a focal length of about 15 feet, and is supplied with eyepieces magnifying from 130 to nearly 1,000 diameters; also with polarizing helioscope, diagonal eyepiece, and an electrically illuminated micrometer; there are both coarse and fine circles in right ascension and declination, the fine circles having reading microscope and electrical illumination.

The Department has in a separate building, a mounting, designed and built by the Department, that carries a 4-inch Browning refractor, a 5-inch portrait lens and an 8-inch parabolic mirror, for the photography of comets, nebulae, etc.

For an account of the Lawrence Fellowship in Astronomy, see page —.

The Department receives telegraphic bulletins of discoveries made at American and European observatories.

Following are the courses open to graduate students in the Department. The more elementary courses are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue.

14. Orbits of Spectroscopic Binaries. Associate Professor COGSHALL. Winter term, T. Th., at 2:00.
8. Theoretical Mechanics. Mr. DREW. Fall, Winter, and Spring terms, M. W. F., at 9:00.
15. Celestial Mechanics. An introductory course. Mr. DREW. Spring term. M. W. F., at 11:00. Open to students who have passed in Course 7.
12. Theoretical Astronomy. Integration of equations of motion; computation of orbits and ephemerides. Mr. DREW. Fall term. Hours and credits to be arranged with each student.
13. Astronomical Research. A limited number of students will be permitted to undertake research work under the supervision of the Department. The equipment is best suited for work in astron-

omy of precision and celestial photography. Associate Professor COGSHALL and Mr. DREW.

Fall, Winter, and Spring terms. Hours and credit arranged with each student.

DEPARTMENT OF PHYSICS

ARTHUR L. FOLEY, Professor.

ROLLA R. RAMSEY, Associate Professor.

The Department offers a full course leading to the degree of Ph.D.

The supply of apparatus for the presentation of courses in modern experimental physics is fairly complete. The equipment and facilities for work have been largely increased during the past three years, especially in the way of delicate instruments and accurate standards for advanced study.

The Library of the Department of Physics contains about six hundred volumes, exclusive of sets of several journals. The following magazines are on file: 'Annalen der Physik', 'Annales de Chimie et de Physique', 'Beiblätter zu den Annalen der Physik', 'Physikalische Zeitschrift', 'The Electrical World and Engineer', 'The Electrician' (London), 'Journal de Physique', 'The Philosophical Magazine', 'The Physical Review', 'The Proceedings of the Physical Society of London', 'The Proceedings of the Royal Society', 'Le Radium', 'School Science and Mathematics', 'Science Abstracts' (A and B), 'Scientific American and Supplement', 'The Western Electrician', 'Cassier's Magazine', and 'The Manual Training Magazine'. Students have access also to the journals on file in the general library, and in the libraries of other Departments. Of these may be named: 'The American Journal of Science', 'The Astrophysical Journal', 'The Engineering and Mining Journal', 'The Engineering Magazine', 'Nature', 'Comptes Rendus', and 'Science'.

Following are the courses open to graduate students in the Department. The more elementary courses are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue.

12. The Electromagnetic Theory of Light. Professor FOLEY.
Fall, Winter, and Spring terms, T. Th., at 9:00.
Wood, 'Optics'.
13. Advanced Mathematical Electricity. Associate Professor RAMSEY.
Fall, Winter, and Spring terms, T. Th., at 8:00.
Webster, 'Electricity and Magnetism'.

34. Sound. Mathematical and physical properties of the vibration of sound-producing bodies, such as strings, rods, plates, air columns, membranes, etc. Assistant Professor DUTCHER.
Fall, Winter, and Spring terms, T. Th., at 10:00.
- 10b. Laboratory Practice in Spectroscopy and Photometry. Associate Professor RAMSEY.
Fall, Winter, and Spring terms, T. Th., at 2:00.
14. Advanced Laboratory Methods and Research. Professor FOLEY.
Fall, Winter, and Spring terms, daily, at 1:00.
22. Current Physical Literature. Professor FOLEY.
Two hours a week throughout the year, at an hour to be appointed.
30. Advanced Theoretical Physics. A critical study of standard treatises and memoirs. Professor FOLEY.
Two hours a week, at a time to be appointed.

DEPARTMENT OF CHEMISTRY

ROBERT E. LYONS, Professor.

LOUIS S. DAVIS, Professor.

OLIVER W. BROWN, Associate Professor.

FRANK C. MATHERS, Associate Professor.

CLARENCE E. MAY, Associate Professor.

The Department of Chemistry has general, special, and private laboratories, a laboratory room, a lecture room, balance rooms, an incubator room, a stock room, museum, etc. Special laboratories are provided for electrochemistry, assaying and electric furnace work, organic, inorganic and physiological chemistry, water and gas analysis, spectroscopic analysis. The laboratories comprise eleven large, well-lighted rooms, equipped with workstands, capable of accommodating two hundred and seventy-five students. Each room is provided with fume hoods and air tight registers connected with a ventilating fan for the removal of offensive and poisonous gases.

The general equipment for graduate work, including laboratory and library facilities, has been materially increased during the past year.

Special attention is given to inorganic, organic, physiological, and physical chemistry and to electrochemistry, technical analytical chemistry, and electro-metallurgy.

The graduate work of the Department, leading to the degree A.M. and Ph.D., comprises advanced laboratory, lecture, library and seminary work in the lines indicated above, and special graduate courses described below. A thesis embodying original investigation is required for an advanced degree.

The laboratories for advanced work and the departmental library are open from 8:00 a.m to 5:00 p.m. There are no classes in the laboratories; each student works independently. A five-hour laboratory course requires two and one-half actual hours of laboratory work daily.

Following are the courses open to graduate students in this Department. The more elementary courses are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue.

19. Physical Chemistry. Laboratory work. Associate Professor BROWN.
22. Electrochemistry. Associate Professor BROWN and Mr. CARLISLE. Winter term. (A) Lectures, T. Th., at 8:00. (B) Laboratory, M. W. F., 1:00 to 4:50.
23. Electrochemistry. Associate Professor BROWN and Mr. CARLISLE. Spring term. (A) Lectures, T. Th., at 8:00. (B) Laboratory, M. W. F., 1:00 to 4:50.
29. Storage Batteries. Lectures and laboratory work. Associate Professor BROWN.
Fall term.
13. Elementary Metallurgy and Assaying. Lectures and laboratory work. Associate Professor BROWN and Mr. CARLISLE.
Fall term. Lectures, T. Th., at 8:00; laboratory work, F. S., 8:00 to 11:50.
15. Advanced Technical and Engineering Analysis. Laboratory work. Associate Professor MATHERS.
Spring term, daily.
32. Gas and Fuel Analysis. Lectures and laboratory work. Associate Professor MATHERS.
Winter term, three hours a week.
33. Spectrum Analysis and Sugar Analysis. Lectures and laboratory work. Associate Professor MATHERS.
Fall term, two hours a week.
26. Chemical Engineering. Associate Professor BROWN.
Fall term. Lectures, M. W. F., at 8:00.
14. Seminary. Reports on current literature and special topics. (1) Fall term: Inorganic Chemistry. Associate Professor MATHERS. (2) Winter term: Organic Chemistry. Professor LYONS and Associate Professor MAY. (3) Spring term: Electrochemistry and Industrial Chemistry. Associate Professor BROWN and Associate Professor MAY.
Fall, Winter, and Spring terms, Th., at 7:00 p.m.
- 12a. Research in Organic or Physiological Chemistry. Professor LYONS and Associate Professor MAY.
Fall, Winter, and Spring terms, daily, 8:00 to 5:00.
- 12b. Research in the Chemistry of the Alkaloids. Professor DAVIS.
Fall, Winter, and Spring terms, daily, 8:00 to 5:00.

- 12c. Research in Physical Chemistry and Electrochemistry. Associate Professor BROWN.
 Fall, Winter, and Spring terms, daily, 8:00 to 5:00.
- 12d. Research in Inorganic Chemistry. Associate Professor MATHERS.
 Fall, Winter, and Spring terms, daily, 8:00 to 5:00.
- 18c. Advanced Physical Chemistry. Lectures on selected chapters of Physical Chemistry. Associate Professor BROWN.
 Spring term, T. Th., at an hour to be arranged.
24. Advanced Electrochemistry and Electro-Metallurgy. (A) Lectures on the design and operation of commercial electric furnaces and on electric furnace processes and products. (B) Advanced laboratory work and research in pure and applied electrochemistry and electro-metallurgy, including investigations in electric furnace work, refining and extraction of metals, electro-synthesis of organic and inorganic compounds, manufacture of storage batteries, and of industrial electrochemical processes. Associate Professor BROWN.
 Fall, Winter, and Spring terms. Laboratory work, daily, 8:00 to 4:50; lectures, Winter term, F., at 8:00.
 Students in this course are recommended to take Physics 10 and 24.
25. Advanced Organic Chemistry. A continuation of Course 6. (A) Lectures and recitations on selected chapters of organic chemistry. (B) Laboratory work or research in synthetic or analytical organic chemistry. Associate Professor MAY.
 (A) Winter and Spring terms, T. Th., 11:00. (B) Fall, Winter, and Spring terms, daily, 8:00 to 4:50.
 Cohen, 'Textbook of Organic Chemistry'; Roscoe and Schorlemer, 'Treatise on Chemistry'; Hammersten, 'Physiological Chemistry'; Hensler-Pond, 'Terpenes'.
 Presupposes Courses 6¹, 6², 7.
31. Advanced Inorganic Chemistry. Laboratory work. The preparation and study of the properties and reactions of the different compounds of the rare and uncommon elements, followed by research. This includes a review of the literature relating to the element that is being studied. Associate Professor MATHERS.
 Fall, Winter, and Spring terms, M. W. F., 8:00 to 4:50.

DEPARTMENT OF GEOLOGY

EDGAR R. CUMINGS, Professor.

JOSHUA W. BEEDE, Associate Professor.

The work offered by the Department, leading to the Ph.D. degree, consists largely of research. Courses 10 and 13 are entirely of this nature. The problems offered for investigation are confined for the most part to stratigraphic geology and paleontology, although several studies in economic and geographic geology have also been published by members of the department.

In stratigraphic geology the subjects covered by the researches of the Department have been concerned chiefly with the Ordovician and Mississippian rocks of Indiana, and with the Upper Carboniferous and Permian rocks of Kansas, Oklahoma, and Texas. In pure paleontology, the Department is especially equipped for the study of problems in the development of Paleozoic Brachiopoda and Bryozoa. Considerable work has already been published in this field.

For the prosecution of researches along the lines indicated above, the Department is adequately equipped. The collections of fossils are especially rich in material from the Ordovician, Silurian, and Mississippian of Indiana, and from the Upper Carboniferous and Permian of Kansas and Texas. The latter collections are among the best in America. A special feature of all these collections is the wealth of screenings containing immature stages of Brachiopoda, Bryozoa, and other fossils.

The laboratory equipment contains the usual apparatus for the preparation of material, and machinery for cutting, grinding and polishing thin sections of fossils. An enlarging and microphotographic camera with special lighting appliances and combinations of lenses for a wide range of work, is available as an aid in the proper illustration of paleontological material.

The Department receives the principal American and European periodicals dealing with geology, paleontology, and geography.

Following are the courses open to graduate students in the Department. The more elementary courses are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue.

3. Economic Geology. A discussion of the non-metallic materials, such as clays, cement, coal, oil and gas, building stones, etc. Associate Professor BEEDE.
Winter term, daily, at 10:00.
5. Systematic Paleontology. Laboratory study of fossil invertebrates. Professor CUMINGS and Associate Professor BEEDE.
Fall, Winter, and Spring terms, two to five hours, at times to be arranged.
- 5a. Evolution. A study of the geologic factors in evolution; the origin of the oldest faunas; age of the earth, etc. Professor CUMINGS. Winter term, at an hour to be arranged.
10. Research. Investigation of geological and paleontological problems. A careful report on each investigation is required, in proper form for publication. Professor CUMINGS and Associate Professor BEEDE.
Fall, Winter, and Spring terms, daily, 9:00 to 4:50.

13. Advanced Field Work. Continuous work in the field for a month or more in the summer, fall, or spring. This course will usually form part of the research work submitted for an advanced degree. The work must be largely independent, but will always be under the general oversight of a member of the department.
14. Stratigraphic Geology. A study of the literature of the various geologic systems. The history of their investigation, and the present knowledge of their divisions, distribution, faunas, and paleography will be fully considered. Professor CUMINGS.
Fall, Winter, and Spring terms. Lectures, T. Th., at 10:00.

DEPARTMENT OF BOTANY

DAVID M. MOTTIER, Professor.

FRANK M. ANDREWS, Associate Professor.

JAMES M. VAN HOOK, Assistant Professor.

Graduate work leading to the degree of Master of Arts in Botany comprises special studies along some line indicated in the advanced courses enumerated below, or the investigation of some problem of a more limited scope. For the degree of Doctor of Philosophy, the subject of the thesis is selected from some line of morphology, cytology, physiology, or mycology. Space is provided for four students, and for the work undertaken the equipment is adequate.

The departmental library contains the more necessary works of reference, and the principal botanical journals.

Following are the courses open to graduate students in the Department. The more elementary courses are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue.

4. Morphology of Fungi. Assistant Professor VAN HOOK.
Fall, Winter, and Spring terms, daily, 1:00 to 3:00.
5. Physiology. Associate Professor ANDREWS.
Fall, Winter, and Spring terms, daily.
6. Cytology. Professor MOTTIER.
Fall, Winter, and Spring terms, daily.
- 5a. Research in Physiology. Special studies will be offered to those pursuing work for advanced degrees. Associate Professor ANDREWS.
Fall, Winter, and Spring terms, daily.
7. Research in Morphology and Cytology. Problems for special investigation in morphology and cytology will be assigned to students who are prepared to undertake original work. Professor MOTTIER.
Fall, Winter, and Spring terms, daily.

13. Morphology of the Algae. A study of the life-history and of the development of vegetative and reproductive organs in certain algae. The work is confined very largely to fresh-water forms. Professor MOTTIER.
Fall, Winter, and Spring terms, daily.
18. Investigations in Mycology and Plant Pathology. Assistant Professor VAN HOOK.
Fall, Winter, and Spring terms, daily, 1:00 to 3:00.

DEPARTMENT OF ZOOLOGY

CARL H. EIGENMANN, Professor and Director of the Biological Station.

FERNANDUS PAYNE, Associate Professor.

WILL SCOTT, Assistant Professor.

Full work leading to the degree Ph.D. is offered in Course 6. It is purely a research course, and offers the widest choice of subjects permitted by the equipment of the Department.

The subjects selected have radiated from centers. One of several of these is the problem, or problems, of the freshwater fauna of tropical America. At present the Department is engaged in a study of divergent evolution as shown by the tropical American characin fishes.

The Department is well equipped for this work. The most important of the Zoological collections is the collection of fishes, comprising many thousand specimens. Arrangements have been made for co-operation with various other institutions, by which the largest aggregation in the world of collections of South American freshwater fishes is available for the monographs in preparation. By special arrangement the collections of Harvard University, made by Professor L. Agassiz and his assistants during the Thayer expedition, and by others, are available for the monograph on the American Characins.

The Department has entered into close relations with the Carnegie Museum of Pittsburgh. Under the direction of Dr. W. J. Holland, director of this Museum, Mr. John Haseman, A.M., '07, during 1907-1910, explored the coast rivers of Brazil, Uruguay, and Argentina, between the Rio San Francisco and Buenos Aires. He ascended the Rio Paraguay, crossed to the Guaporé and descended that river and the Rio Madeira to Manaos, on the Amazon, making collections on the way.

From August to December, 1908, Professor Eigenmann, with Mr. S. E. Shideler as volunteer assistant, explored the Demerara,

Essequibo, and Potaro rivers of British Guiana. Very extensive collections were made in the lowland, as well as above the Kaieteur, a vertical fall of 741 feet of the Potaro river. The results of the expedition have been published by the Carnegie Museum as reports of the British Guiana Expedition of Indiana University and the Carnegie Museum. The final report on "The Freshwater Fishes of British Guiana" was issued in August, 1912.

From January to April, 1912, Professor Eigenmann made collections in the San Juan, Atrato, Dagua, Cauca, and Magdalena rivers in Colombia.

During January to April of 1913 Mr. Charles Wilson and Mr. Arthur Henn explored the Patia River of Southwestern Colombia and supplemented the work done the preceding year in the San Juan and Atrato Basins of Colombia. Their work was made possible by the generosity of Mr. Hugh McK. Landon and Mr. Carl G. Fisher of Indianapolis. Mr. Landon has generously provided the means to enable Mr. Henn to extend the work into Ecuador.

The second center of departmental interest has been, and is, the subject of heredity, especially: (A) The history of the Sex Cells (B) Variation, (C) The rate of ontogenetic and phylogenetic modification of the sense organs of Cave Animals, (D) Experimental Zoölogy.

For the study of cave animals (C) the facilities of the Department are ideal. The University is located at the edge of the great cave region of the Mississippi valley. By act of the Legislature, the Donaldson estate near Mitchell, * Indiana, has been placed in the keeping of the trustees of Indiana University. On it are situated numerous sinkholes, dry caves, and an underground water-course at least two miles long. This underground river is rich in blind fishes and other blind aquatic animals. A small laboratory has been erected on the farm, and is in charge of a research fellow, appointed from year to year. In the study of cave animals the Department has in the past had the coöperation of the Carnegie Institution, the American Association for the Advancement of Science, and the Elizabeth Thompson Science Fund.

For the study of variation (B) in non-migratory vertebrates in a 'unit of environment' this Department organized and has since maintained a fresh-water Biological Station. It is at present located on Winona Lake, Kosciusko County, Indiana, in the grounds

*By a recent decision of the Supreme Court, the act placing the management of this land in the hands of the trustees of Indiana University has been decided to be unconstitutional.

of the Winona Assembly. The Station owns, as a gift of the Winona Assembly, two buildings, 20 x 45 feet, each two stories high. The buildings are on the lake front, at the mouth of Cherry Creek. The Station also owns boats, nets, sounding and temperature apparatus, glassware, etc. Microscopes and other needed apparatus are moved to the Station from the University.

For the study of sex cells (A), and Experimental Zoölogy (D), the Department owns all the necessary apparatus and the surroundings of the University offer an abundance of material. The Department also owns collections gathered in the vicinities of Jackson, Miss., Salt Lake City, Los Angeles, Tucson, El Paso, and San Antonio by Professor Payne.

A third line of work undertaken by the Department is the survey of Indiana Lakes. Hydrographic maps of the lakes are being made, the physical and chemical conditions determined, and the various biological phenomena analyzed.

The field work for these investigations is done in the summer, the Biological Station on Winona Lake being used as a base. The solution ponds in the region of the University are being utilized for comparative studies.

Following are the courses open to graduate students in the Department. The more elementary courses are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue.

3. Advanced Zoölogy. Professor EIGENMANN and Assistant Professors PAYNE and SCOTT.
Fall, Winter, and Spring terms, five hours a week.
4. General Biological Problems: (A) The development of the idea of evolution and Darwinism; (B) The laws of heredity. Professor EIGENMANN.
Spring term, daily, at 9:00.
5. Seminary. Weekly meetings of advanced students and instructors to discuss current literature and report on investigations in progress. Professor EIGENMANN and Associate Professor PAYNE.
Fall, Winter, and Spring terms, M., at 4:00.
6. Research. Special investigation of zoölogical problems, with a report on each investigation. Branches in which subjects have in the past been selected and reported upon are Variation, Degeneration, Regeneration, Sense Organs, Embryology, Faunal and Systematic Studies of Fishes, Ecology of Cave and Freshwater Animals, Cell and Chromosome Studies. For a fuller statement, see the general statement of the Department. Professor EIGENMANN, Associate Professor PAYNE, and Assistant Professor SCOTT.
Fall, Winter, and Spring terms, 8:00 to 4:30.

7. Biological Survey. A continuation of the previous work in the physical and biological features of Winona Lake and its environs. Professor EIGENMANN, Assistant Professor SCOTT. Summer term, at the Biological Station.

DEPARTMENT OF ANATOMY

BURTON D. MYERS, Professor.
AUGUSTUS G. POHLMAN, Professor.

Following are the courses open to graduate students in the Department. The more elementary courses are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue.

13. Research Work. Opportunity for research work is offered to advanced students who may have at least one-half their time for one year free for the work. Professors MYERS and POHLMAN. Fall, Winter, and Spring terms, at hours to be appointed.
15. Advanced Course in Anatomy. Open to students who have completed the dissection of the human body, Course 8, and desire to do special or advanced work. Professors MYERS and POHLMAN. Fall, Winter, and Spring terms, at hours to be appointed.

PHYSIOLOGY

WILLIAM J. MOENKHAUS, Professor.
CLARENCE EDMONDSON, Teaching Fellow.

Facilities for research leading to the higher degrees are available within restricted lines in general physiology.

Following are the courses open to graduate students in the Department. The more elementary courses are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue.

6. Advanced Physiology. Professor MOENKHAUS.
Fall, Winter, and Spring terms, at hours to be arranged.
10. Research. Problem work in certain phases of general physiology may be taken by those properly equipped. Professor MOENKHAUS. Fall, Winter, and Spring terms, daily, 8:00 to 4:50.
11. Seminary.

EDUCATION

WILLIAM W. BLACK, Professor and Dean.

ELMER E. JONES, Professor.

W. F. BOOK, Professor.

HENRY LESTER SMITH, Lecturer on Education.

Graduate work is offered in the School of Education, and special programs leading to the A.M. and Ph.D. degrees, with the Master's and Doctor's certificates of Education, will be arranged on application.

A student whose undergraduate major was in another department will usually be given opportunity to do in one year the work for the A.M. degree in Education. The work will include such undergraduate courses in Education as may be necessary as a basis for graduate work.

In the future, as in the past, the best work of students in the courses in research work will be published.

Following are the courses open to graduate students in the School. The more elementary courses are not here listed; for these or for fuller statements of the courses below, see the bulletin of the School of Education, or under that heading in the University catalogue.

6. History of Education. Professor JONES.
Fall, Winter, and Spring terms, T. Th., at 8:00.
10. Philosophy of Education. Professor JONES.
Fall, Winter, and Spring terms, M. W. F., at 8:00.
15. School Administration. Mr. SMITH.
Fall, Winter, and Spring terms, M. W. F., at 10:00.
- 16a. Educational Seminary. Professor JONES.
Fall, Winter, and Spring terms, T., at 7:00 p.m.
- 16b. Educational Seminary. Elementary Education. Professor BLACK.
Fall, Winter, and Spring terms, M., at 7:00 p.m.
17. Advanced Educational Psychology. Professor Book.
Fall, Winter, and Spring terms, M. W. F., at 10:00.
9. Orthogenics. Professor JONES.
Fall, Winter, and Spring terms, T. Th., at 3:00.
11. Principles of Organization and Supervision. Professor BLACK.
Fall, Winter, and Spring terms, T. Th., at 10:00.
19. Experimental Pedagogy. Professor Book.
Fall, Winter, and Spring terms, T. Th., at 11:00.
18. Research in Education.
 - a. The Problems of the Elementary School. Professor BLACK.
 - b. The History and Philosophy of Education. Professor JONES.
 - c. The Psychology of the Processes of Education. Professor Book.
 - d. Secondary Education. Professor Book.

Students Registered in the Graduate School, 1912-1913

S, Summer term. F, Fall term. W, Winter term. Sp, Spring term.

Abell, Jasper August.....	Middletown, Ind.
A. B., 1910, Indiana University.	Education..... S.
Aley, Max.....	Bloomington, Ind.
A. B., 1911, Indiana University.	English..... F.
Alger, Louise Florence.....	Wabash, Ind.
A. B., 1908, Indiana University.	English..... F. W. Sp.
Allen, William Ray.....	Hartfort City, Ind.
A. B., 1913, Indiana University.	Zoölogy..... Sp.
Anderson, Jean Jussen.....	Wabash, Ind.
A. B., 1911, Indiana University.	German..... S.
Andrews, Mrs. Marie Opperman.....	Bloomington, Ind.
A. B., 1902, Indiana University; A. M., 1903, Wellesley.	Botany..... F. W.
Artman, Oliver Clarence.....	Noblesville, Ind.
A. B., 1912, Indiana University.	Sociology..... S. F. W. Sp.
Ashbaugh, Ernest James.....	Marion, Ind.
A. B., 1912, Indiana University.	Education..... F. W. Sp.
Teaching Fellow in Education.	
Baldwin, Mary.....	Westfield, Ind.
A. B., 1910, Earlham College.	English..... Sp.
Barbre, Mrs. Nellie May Ensley.....	Rockville, Ind.
A. B., 1907, De Pauw University.	German..... S.
Barr, Hugh Harlan.....	Elwood, Ind.
A. B., 1908.	Education..... S.
Baughman, Nellie May.....	Rockfield, Ind.
A. B., 1909, Indiana University.	Mathematics.... F. W. Sp.
Beeker, Ruby Mildred.....	Battle Ground, Ind.
A. B., 1910, Indiana University.	German..... S.
Benedict, Laura Augusta.....	Paragon, Ind.
A. B., 1909, Indiana University.	English..... S.
Bennett, Lawrence Hill.....	Indianapolis, Ind.
A. B., 1912, Indiana University.	History..... S.
Black, Edward Elmer.....	Hanover, Ind.
B. S., 1912, Hanover, Col.	History..... S.
Bourn, Frederick E.....	Stilesville, Ind.
A. B., 1911, Indiana University.	Education..... S.
Bowlus, Genevieve.....	Williamsport, Ind.
A. B., 1913, Indiana University.	Latin..... Sp.
Breitwieser, Thomas John.....	Tipton, Ind.
A. B., 1912, Indiana University.	Education..... F. W. Sp.
Teaching Fellow in Philosophy.	

Brown, Hugh Everett	Bloomington, Ind.
A. B., 1912, Indiana University.	Physics.....F. W. Sp.
Teaching Fellow in Physics.	
Brownfield, Lilian Beeson	South Bend, Ind.
A. B., 1895, De Pauw University; A. M., 1904, Ohio Wesleyan.	English.....F. W. Sp.
Broyles, Bertha Lee	Ellendale, N. Dak.
A. B., 1905, Indiana University.	English.....S.
Broyles, William Anderson	Ellendale, N. Dak.
B. S., Tri-State College; A. B., 1905, Indiana University.	Education.....S.
Bruner, Charley	Bloomington, Ind.
A. B., 1910, Indiana University.	Education.....F. W. Sp.
Burke, Robert E.	Bloomington, Ind.
A. B., 1913, Indiana University.	Fine Arts.....F. W. Sp.
Burke, Walter Demoree	Bloomfield, Ind.
A. B., 1908, Indiana University.	Education.....S.
Butcher, Ralph Emerson	Harrodsburg, Ind.
A. B., 1911, Indiana University.	Education.....S.
Bybee, Halbert Pleasant	Rochester, Ind.
B. S., Rochester Normal School; A. B., 1912, Indiana University; A. M., 1912, Indiana University.	Geology.....F. W. Sp.
Teaching Fellow in Geology.	
Cassell, Lucile Helen	Bloomington, Ind.
A. B., 1911, Indiana University.	Education.....Sp.
Cauble, Christopher C.	Clayton, Ind.
A. B., 1910, Indiana University.	Education.....S.
Clark, John Roseoe	Worthington, Ind.
A. B., 1912, Indiana University.	Psychology.....S.
Cline, Laura Russell	Jonesboro, Ind.
A. B., 1905, Indiana University.	German.....S.
Cockrell, Emerson Tracy	Franklin, Ind.
A. B., 1912, Franklin College.	History (?).....S.
Coe, John Ira Lee	Bloomington, Ind.
A. B., 1912, Indiana University.	.....S.
Conrad, Fred Allen	Sterling, Ohio.
A. B., 1912, Goshen College.	Sociology.....F. W. Sp.
State Fellow.	
Cook, Stanley Vance	Crestes, Ind.
A. B., 1912, Indiana University.	Chemistry.....F. W. Sp.
Teaching Fellow in Chemistry.	
Cox, James Emery	Oakland City, Ind.
A. B., 1911, Oakland City College.	English.....F. W. Sp.
Craig, Everett Harrison	Seymour, Ind.
A. B., 1912, Indiana University.	Chemistry.....S.
Curtis, Ernest Bain	Martinsville, Ind.
A. B., 1912, Indiana University.	Chemistry.....F. W. Sp.
Teaching Fellow in Chemistry.	

Cuzzort, Belvia Ethel.....	English, Ind.
A. B., 1912, Indiana University.	Education.....F. W. Sp.
Teaching Fellow in Education.	
Davis, Elizabeth Louise.....	Jeffersonville, Ind.
A. B., 1910, Indiana University.	Latin.....F.
Davis, Walter Allison.....	Bloomington, Ind.
A. B., 1907, Indiana University.	Education.....S.
Densford, Harlem Eugene.....	Crothersville, Ind.
A. B., 1907, Indiana University; A. M., 1910, Indiana University.	English.....F. W. Sp.
Doehleman, Zenol Ruth.....	Lebanon, Ind.
A. B., 1905, Indiana University.	German.....S.
Dutcher, John B.....	Bloomington, Ind.
A. B., 1906, Indiana University; A. M., 1907, Indiana University.	Physics.....F. W. Sp.
DuValle, Sylvester Howard.....	Indianapolis, Ind.
A. B., 1912, Butler College.	Education.....F. W. Sp.
Easley, Katherine.....	New Albany, Ind.
A. B., 1912, Indiana University.	English.....F. W. Sp.
Eddingfield, June.....	Crawfordsville, Ind.
A. B., 1906, Indiana University.	German.....S.
Edmondson, Clarence Edmund.....	Bloomington, Ind.
A. B., 1906; A. M., 1912, Indiana University.	Physiology.....F. W. Sp.
Eikenberry, Dan Harrison.....	Kokomo, Ind.
A. B., 1911, Indiana University.	Education.....S.
Elliott, Otis.....	Eminence, Ind.
A. B., 1909, Indiana University.	English.....S.
Esarey, Logan.....	Bloomington, Ind.
A. B., 1905; A. M., 1909, Indiana University.	History.....F. W. Sp.
Research Fellow in History.	
Fern, Gilbert Horney.....	Bloomington, Ind.
A. B., 1912, Butler College.	Philosophy.....F. W. Sp.
State Fellow.	
Freshwater, Ernest B.....	Bloomington, Ind.
A. B., 1907, Ohio Wesleyan.	Latin.....F. W. Sp.
Galloway, Jesse James.....	Cromwell, Ind.
A. B., 1909; A. M., 1911, Indiana University.	Geology.....F. W. Sp.
versity.	
Gerichs, William Christian.....	Bloomington, Ind.
A. B., 1907, Indiana University.	History.....S.
Gilmer, Harold Wright.....	Bloomington, Ind.
A. B., 1904, Monmouth College.	Latin.....F. W. Sp.
Glascock, David Albert.....	Veedersburg, Ind.
A. B., Wabash College.	Zoölogy.....S.
Goad, Winfred Lewellyn.....	Sulphur, Ind.
A. B., 1912, Indiana University.	Education.....S.
Goss, Mrs. Alice Diven.....	Bloomington, Ind.
A. B., 1908, Indiana University.	German.....

Grable, Theodore Eli		Montgomery, Ind.
A. B., 1907; A. M., 1910, Indiana Uni-	History	W.
versity.		
Graham, Hope Whitecomb		Indianapolis, Ind.
A. B., 1911, Butler College; A. M.,	History	S.
1912, Indiana University.		
Grantham, Guy Everett		Ladoga, Ind.
A. B., 1909, Indiana University.	Physics	S.
Grosswege, Bertha Regina		Avilla, Ind.
A. B., 1911, Indiana University.	German	S.
Hacker, William A		Bloomington, Ind.
A. B., 1912, Indiana University.	Education	S.
Hanna, Elizabeth May		Roachdale, Ind.
A. B., 1910, Indiana University.	Latin	S.
Hansford, Hazel Irene		Bloomington, Ind.
A. B., 1913, Indiana University.	English	Sp.
Harlan, Clara May		
B. S., 1906, Valparaiso University;	Latin	Sp.
A. B., 1913, Indiana University.		
Hart, Ella Bond		Bloomington, Ind.
A. B., 1892; A. M., 1912, Indiana Uni-	English	S.
versity.		
Haworth, Clarence		Kokomo, Ind.
A. B., 1908, Indiana University.	History	S.
Hazard, Clifton Terrell		Wilmington, O.
A. B., 1906, Wilmington College.	Mathematics	S.
Hennel, Edith Amelia		Bloomington, Ind.
A. B., 1911; A. M., 1912, Indiana Uni-	Botany	F. W. Sp.
versity.		
Teaching Fellow in Botany.		
Henry, Edna Gertrude		Indianapolis, Ind.
A. B., 1897, Indiana University.	Economics	F. W. Sp.
Henry, Glenwod W		Danville, Ill.
A. B., 1907, Wabash College.	Zoölogy	S. W. Sp.
Hess, John Ambrose		Bloomington, Ind.
A. B., 1908, Kansas University; A. M.,	German	S. F. W. Sp.
1910, Kansas University.		
Hitchcock, Wiley		Elmore, Ind.
A. B., 1908, Indiana St. Normal.	Chemistry (?)	S. F. W. Sp.
Hoffman, Marion Mardick		Indianapolis, Ind.
A. B., 1912, Indiana University.	German	S.
Hogate, Jessie M		Bloomington, Ind.
Ph. B., 1899, Allegheny College,	History	S. F.
Meadville, Pa.		
Hogue, Rolla Martin		Wheatland, Ind.
A. B., 1910, Indiana University.	History	S.
Hohnes, Mrs. Edith DuVall		Lebanon, Ind.
A. B., 1908, Indiana University.	Botany	S.
Holiman, Willie Newton		Petroleum, Ind.
A. B., 1913, Indiana University.	Education	Sp.

Horner, Mary	Bloomington, Ind.	
A. B., 1905; A. M., 1908, Indiana Uni- versity.	German.....	S.
Horton, Deo Wesley	Hoovers, Ind.	
A. B., 1909, Indiana University.	Education.....	S.
Howard, Jesse Myers	Clermont, Ind.	
A. B., 1911, Indiana University.	Economics.....	F.
Hutchinson, Nathaniel F.	Huntingburg, Ind.	
A. B., 1911, Indiana University.	Education (?)....	S.
Isley, Floy	Shelbyville, Ind.	
A. B., 1911, Indiana University.	History.....	F.
Jackson, Thomas Franklin	Bloomington, Ind.	
A. B., 1913, Indiana University.	Geology.....	Sp.
Johnson, William Piatt	Sheffield, Ala.	
B. Ped., 1901, Kentucky State Uni- versity.	Education.....	S.
King, Ruby Olive	Bloomington, Ind.	
A. B., 1909, Indiana University.	English.....	S.
Kinnick, Otto Claude	Bloomington, Ind.	
A. B., 1910, Indiana University.	English.....	S.
Kuebler, John Ralph	Mt. Vernon, Ind.	
A. B., 1912, Indiana University.	Physics.....	S.
Kimmel, Margaret Mollie	Lafontaine, Ind.	
A. B., 1911, Indiana University.	English.....	F.
Latzke, Frances Renshaw	New York City.	
A. B., 1912, Columbia University.	French.....	F. W. Sp.
Linton, Ernest Marshall	Bloomington, Ind.	
A. B., 1911, Butler College; A. M., 1912, Indiana University. Teaching Fellow in History.	History.....	F. W. Sp.
List, Earle Beegen	Franklin, Ind.	
B. S., Franklin College.	Biology (?)....	S.
Lee, Ira Elver	Bloomington, Ind.	
A. B., 1911; A. M., 1912, Indiana Uni- versity.	Chemistry.....	S.
Leonard, Adam Ahi	Hillsboro, Ind.	
A. B., 1912, Indiana University.	History.....	S.
McCartney, Fred Morton	Bloomington, Ind.	
A. B., 1912, Indiana University.	Philosophy.....	F. W. Sp.
McCloskey, Mary Magdalene	Bloomington, Ind.	
A. B., 1912, Indiana University.	English.....	F. W. Sp.
Mance, Grover Cleveland	Pinebush, N. Y.	
B. S., 1908, Colgate University.	Geology.....	W. Sp.
Marble, Hugh M.	Jeffersonville, Ind.	
A. B., 1910, Hanover College.	Chemistry.....	Sp.
Mason, Edward Hufford	Rossville, Ind.	
A. B., 1911; A. M., 1912, Indiana Uni- versity.	Physics.....	S. F. W. Sp.

Mason, Thomas Edward.....	Bloomington, Ind.
A. B., 1905; A. M., 1912, Indiana Uni- versity.	Mathematics.....S. F. W. Sp.
Teaching Fellow in Mathematics.	
Meier, Henry Frederick August.....	Bloomington, Ind.
A. B., 1912, Indiana University.	Botany.....S.
Meyer, Lee Albert.....	Bloomington, Ind.
A. B., 1913, Indiana University.	English.....Sp.
Mikami, Hachishiro.....	Japan.
A. B., 1909, Waseda University, Japan.	Sociology.....F. W. Sp.
Milburn, Norma Jane.....	Jasper, Ind.
A. B., 1910, Indiana University.	English.....S.
Milburn, Richard M.....	Jasper, Ind.
A. B., 1903; A. M., 1908, Indiana Uni- versity.	History.....S.
Miller, Alvah Leslie.....	Pasadena, Cal.
A. B. 1909, Morningside College.	Economics.....F. W.
Mills, Clifford Newton.....	Franklin, Ind.
B. S., 1910, Franklin College.	Mathematics.....S.
Montgomery, Emery Watkins.....	Mt. Vernon, Ind.
A. B., 1909, Indiana University.	History.....S.
Montgomery, Bertha.....	Bedford, Ind.
A. B., 1911, Indiana University.	German.....S.
Morris, Frank.....	Pekin, Ind.
B. S., 1907; E. Ped., 1908; Valparaiso University; A. B., 1912, Indiana University.	Mathematics.....S. F. W. Sp.
Teaching Fellow in Mathematics.	
Mourer, Harry Hartley.....	Idaville, Ind.
A. B., 1913, Indiana University.	History.....Sp.
Murphy, Maurice Elzie.....	
A. B., 1913, Indiana University.	History.....Sp.
Nay, Bavis Clay.....	Danville, Ind.
A. B., 1910, Indiana University.	Education.....S.
Neel, William Finley.....	Akron, Ind.
A. B., 1908, Indiana University.	Education.....S. Sp.
Nothnagel, Mildred.....	Bloomington, Ind.
A. B., 1913, Indiana University.	Botany.....Sp.
O'Neal, Claude Edgar.....	Amo, Ind.
A. B., 1911, Indiana University.	Botany.....S. F. W. Sp.
Teaching Fellow in Botany.	
Osborn, Otto Charles.....	Linton, Ind.
A. B., 1911, Indiana University.	Education.....S.
Palmer, William Norene.....	Ligonier, Ind.
A. B., 1912, Indiana University.	Chemistry.....S. F. W. Sp.
Teaching Fellow in Chemistry.	
Pennington, William Lee.....	Bloomington, Ind.
B. Ped., Kentucky State Agricultural and Technical College; A. M., 1912, Indiana University.	Education.....S.

Pflueger, Luther Appel.....	Turbotville, Pa.
B. E., 1900; M. E., 1903, Kutztown State Normal; B. A., 1906, Muhlenberg College.	German.....F. W. Sp.
Research Fellow in German.	
Pickett, Fermen Layton.....	Bloomington, Ind.
A. B., 1910, Indiana University.	Botany.....S. F. W. Sp
Assistant in Botany.	
Prichard, Clarence Edward.....	Greenwood, Ind.
A. B., 1912, Butler College.	Chemistry.....F. W. Sp.
State Fellow.	
Quinn, Mrs. Ally Compton.....	Wilmington, O.
A. B., 1905, Wilmington College.	Botany.....W. Sp.
Raber, Oran Levi.....	Wolcottville, Ind.
A. B., 1912, Indiana University.	Botany.....S.
Ramsey, Earl E.....	Bloomington, Ind.
A. B., 1902; A. M., 1910, Indiana University.	Education.....F.
Ratliff, Mary Louise.....	Lyons, Ind.
A. B., 1911, Earlham College.	German.....S.
Ray, Mary Estella.....	Bloomington, Ind.
A. B., 1911, Indiana University.	Latin.....S.
Reagan, Franklin Pearce.....	Tipton, Ind.
A. B., 1913, Indiana University.	Zoölogy.....Sp.
Teaching Fellow in Embryology.	
Records, Thomas W.....	Bloomington, Ind.
A. B., 1901, Indiana University.	Physics.....S.
Reid, Nina Kathleen.....	Attica, Ind.
A. B., 1911, Indiana University.	History.....F. W. Sp.
Reising, John Albert.....	Orleans, Ind.
B. S., 1893, Valparaiso University;	Mathematics....S.
A. B., 1911, Indiana University.	
Richards, Ernest Davis.....	Ingalls, Ind.
A. B., 1908, Indiana University.	Education.....S.
Rickard, Sherman Clement.....	Pekin, Ind.
A. B., 1902, Indiana University.	Education.....S.
Risley, Lee Harrison.....	Velpen, Ind.
A. B., 1912, Indiana University.	Chemistry.....S.
Rizer, Eldridge Benton.....	Bloomington, Ind.
A. B., 1912, Indiana University.	Education.....S.
Robbins, Rainard Benton.....	Muncie, Ind.
A. B., 1909; A. M., 1910, Indiana University.	Mathematics....S.
Sachs, Inez Floyance.....	Towanda, Ill.
A. B., 1903, Westfield College; B. L. S., 1909, University of Illinois.	German (?).....F. W. Sp.
Schlotzhauer, Alma Elizabeth.....	Indianapolis, Ind.
A. B., 1912, Indiana University.	German.....F. W. Sp.
Scott, Mrs. Naomi Crumbaugh.....	Bloomington, Ind.
A. B., 1910, Indiana University.	.....F.

Senour, Frank E.		New Augusta, Ind.
A. B., 1911, Indiana University.	English	S. F. W. Sp.
Sharp, Russell Alger	Charlestown, Ind.	
A. B., 1911, Indiana University.	English	S. F. W. Sp.
Shideler, Samuel Ervin	Huntington, Ind.	
A. B., 1909; A. M., 1912, Indiana Uni- versity.	Education	F. W. Sp.
Teaching Fellow in Education.		
Shockley, Ernest Vivian	Angola, Ind.	
A. B., 1909; A. M., 1912, Indiana Uni- versity.	History	F. W. Sp.
Research Fellow in Education.		
Simmons, Vesta Rhea	Bloomington, Ind.	
A. B., 1909, Indiana University.	English	F. W. Sp.
Skinner, Charles Henry	Fairmount, Ind.	
A. B., 1913, Indiana University.	Physics (?)	W.
Smith, Bessie Lee	Bloomington, Ind.	
A. B., 1913, Indiana University.	Education	Sp.
Smith, Broadus Monroe	Franklin, Ind.	
A. B., 1910, Franklin College.	Psychology	S.
Smith, John Masson	Union City, Ind.	
A. B., 1913, Indiana University.	French	W. Sp.
Teaching Fellow in French.		
Smith, Ronald Ross	Bloomington, Ind.	
A. B., 1912, Indiana University.	Education	S. F. W. Sp.
Smith, William	Oklahoma.	
A. B., 1896, Indiana University.	Education	S.
Spain, Helen Gail	Indianapolis, Ind.	
A. B., 1910, Wilson College; A. M., 1911, Indiana University.	English	S.
Specker, Guy Greene	West Lafayette, Ind.	
A. B., 1912, Indiana University.	Mathematics	S.
Stapp, Gail Miers	Hope, Ind.	
A. B., 1912, Indiana University.	Chemistry	F. W. Sp.
Teaching Fellow in Chemistry.		
Steimley, Leonard Leo	Attica, Ind.	
A. B., 1912, Indiana University.	Mathematics	F. W. Sp.
Assistant in Mathematics.		
Stephan, Leon B.	Huntington, Ind.	
A. B., 1908, Indiana University.	German	S.
Stephenson, Nettie	Bedford, Ind.	
A. B., 1911, Indiana University.	English	S.
Stewart, Bessie Jean	Bloomington, Ind.	
A. B., 1911, Indiana University.	English	F. W. Sp.
Stewart, Clifton Aleott	Muncie, Ind.	
A. B., 1911, Indiana University.	Chemistry	Sp.
Stratton, William Timothy	Redkey, Ind.	
A. B., 1906, Indiana University.	Mathematics	S.
Stull, James Grant	Bloomington, Ind.	
A. B., 1893; L. L. B., 1901, Indiana University.	Education	S.

Tanke, Clayton Ellsworth.....	Pendleton, Ind.
A. B., 1912, Indiana University.	Chemistry.....S.
Taylor, James Franklin.....	Linton, Ind.
A. B., 1909, Indiana University.	Mathematics.....S.
Taylor, Vergie Johnson.....	Bloomfield, Ind.
A. B., 1910, Indiana University.	English.....S.
Teeter, Arthur Lewis.....	Monticello, Ind.
A. B., 1911, Indiana University.	Chemistry.....S.
Todd, Lela Carlton.....	Bloomington, Ind.
A. B., 1910, Indiana University.	English.....F.
Tourner, Anna Belle.....	Bloomington, Ind.
A. B.; A. M., Chicago University.	.....F. W.
Trapp, William Oscar.....	Hoboken, N. Y.
A. B., 1912, Indiana University.	Philosophy.....F. W. Sp.
Teaching Fellow in Philosophy.	
Trovillion, Mae C.....	Bloomington, Ind.
A. B., 1912, Indiana University.	Orthogenics.....F. W. Sp.
Ulrey Clayton.....	North Manchester, Ind.
A. B., 1911, Indiana University.	Physics.....S.
Ulrey, Sharon S.....	North Manchester, Ind.
A. B., 1912, Indiana University.	History.....S.
Valentine, Royal Herbert.....	Bloomington, Ind.
A. B., 1911, Moores Hill College.	Education.....S.
Vance, Lola Ella.....	Noblesville, Ind.
A. B., 1907, De Pauw University; A. M.,	Zoölogy
1912, Indiana University.	F. W. Sp.
Teaching Fellow in Zoology.	
Vickrey, Earl Wayne.....	Akron, Ind.
A. B., 1912, Indiana University.	Geology.....S.
Vogel, William Frederick.....	Boonville, Ind.
A. B., 1912, Indiana University.	Education.....S.
Walker, Nellie Lucile.....	Bloomington, Ind.
A. B., 1912, Indiana University.	English.....F. W. Sp.
Ward, Ada Leora.....	Moores Hill, Ind.
B. S., 1909, Moores Hill College.	English.....S.
Wedeking, Albert Jesse.....	
A. B., 1908, Valparaiso University;	German.....Sp.
A. B., 1913, Indiana University.	
Werremeyer, Daniel William.....	Ft. Wayne, Ind.
A. B., 1910, Indiana University.	Mathematics....S.
Whitehead, Sarah Anne.....	Inglefield, Ind.
A. B., 1912, Indiana University.	English.....S.
Whitemarsh, James Hardin.....	Hardengrove, Ind.
A. B., 1912, Indiana University.	Education.....S.
Whitney, Claude.....	Spencer, Ind.
A. B., 1911, Indiana University.	Greek.....F. W. Sp.
Research Fellow in Greek.	
Williams, Oscar Harrison.....	Bloomington, Ind.
A. B., 1905, Indiana University.	Education.....W.
Wood, Harry Warren.....	Indianapolis, Ind.
A. B., 1909, Indiana University.	Geology.....S.

Woody, Clifford.....	Thorntown, Ind.
A. B., 1908, Indiana University.	Education.....S. F. W. Sp.
Woolery, Ruth.....	Bloomington, Ind.
A. B., 1912, Indiana University.	Botany.....F. W. Sp.
Teaching Fellow in Botany.	
Zaugg, Walter Albert.....	
A. B., 1913, Indiana University.	Education.....Sp.

SUMMARY

Total enrollment of the Summer term.....	104
Enrolled for the Summer term only.....	87
Total enrollment of the Fall term.....	72
Enrolled for the Fall term only.....	8
Total enrollment of the Winter term.....	71
Enrollment for the Winter term only.....	3
Total enrollment of the Spring term.....	70
Enrolled for the Spring term only.....	18
Enrolled for Winter and Spring terms only.....	3
Enrolled for the Summer and Fall terms only.....	1
Enrolled for the Fall and Winter terms only.....	3
Enrolled for the Summer, Winter, and Spring terms only.....	1
Enrolled for the Summer, Fall, Winter and Spring terms.....	12
Enrolled for the Fall, Winter, and Spring terms.....	48

The Summer term enrollment is in large part different from the enrollment of the rest of the year. Only fifteen of the one hundred and two Summer term students were in residence during other parts of the year and of these thirteen remained during the entire year. Of these thirteen nine are holding appointments from the University

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1914/15

UNIVERSITY OF INDIANA

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VOL. XII, No. 3

JANUARY 25, 1914

INDIANA UNIVERSITY BULLETIN



UNIVERSITY OF INDIANA

JAN 25 1921

GRADUATE SCHOOL 1914

Entered as second-class mail matter May 16, 1908, at the post-office at Bloomington,
Indiana, under act of Congress of July 16, 1894

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University Calendar

SUMMER TERM, 1914

<i>June 25, Thursday.</i>	Registration and enrollment for the Summer term.
<i>June 26, Friday.</i>	Recitations and lectures begin for the First half-term. (Instruction five days a week.)
<i>August 5, Wednesday.</i>	First half-term ends.
<i>August 6, Thursday.</i>	Recitations and lectures begin for Second half-term. (Instruction six days a week.)
<i>Sept. 9, Wednesday.</i>	Summer term ends.

FALL TERM, 1914-15

<i>Sept. 29, Tuesday.</i>	Registration and enrollment in classes for the Fall term.
<i>Sept. 30, Wednesday.</i>	Recitations and lectures begin.
<i>Nov. 26 and 27, Thursday and Friday.</i>	Thanksgiving recess.
<i>Dec. 19, Saturday.</i>	Fall term ends.

WINTER TERM, 1914-15

<i>Jan. 5, Tuesday.</i>	Registration and enrollment in classes for the Winter term.
<i>Jan. 6, Wednesday.</i>	Recitations and lectures begin.
<i>Jan. 20, Wednesday.</i>	Foundation day, a holiday.
<i>Mar. 27, Saturday, 6 p. m.</i>	Winter term ends.

SPRING TERM, 1914-15

<i>Mar. 31, Wednesday.</i>	Registration and enrollment in classes for the Spring term.
<i>April 1, Thursday.</i>	Recitations and lectures begin.
<i>June 19, Saturday, 6 p. m.</i>	Spring term ends.
<i>June 23, Wednesday.</i>	University Commencement.

INDIANA UNIVERSITY BULLETIN

VOL. XII

BLOOMINGTON, IND., APRIL 15, 1914

NO. 3

Entered as second-class mail matter May 16, 1908, at the post-office at Bloomington, Indiana, under the act of July 16, 1894. Published from the University office, Bloomington, Indiana, semi-monthly January, February, March, April, May, and June, and monthly July, August, September, October, November, and December.

Prefatory Note

Indiana University is the State University of Indiana, and the head of the public school system of the State. It takes its origin from the State Seminary, which was established by act of the Legislature, approved January 20, 1820. In 1828, the title of the Seminary was changed by the Legislature to that of the Indiana College; and in 1838, the University was given its present name. In 1867, Indiana University became coeducational.

The University comprises the following schools:

- The College of Liberal Arts, organized in 1828;
- The School of Law, organized in 1842, reorganized in 1889;
- The School of Medicine, organized in 1903;
- The Graduate School, organized in 1904;
- The School of Education, organized in 1908.

The first advanced degrees, conferred for graduate work, were granted in 1882. During the eighties, well defined regulations for graduate work and graduate degrees were stated in the University catalogue, and a considerable number of graduate students were enrolled, especially in the natural sciences. In the years 1882 to 1893, inclusive, the University graduated fourteen Doctors of Philosophy, ninety nine Masters of Arts, and twelve Masters of Science. For some years following 1893, however, the degree of Doctor of Philosophy was not conferred.

In 1904, there took place the segregation and formal organization of the Graduate School, and in 1908, the office of Dean of the Graduate School was created.

This number of the Bulletin is devoted to setting forth the facilities for graduate work in the several departments of the Uni-

versity. Courses intended primarily for graduate students are described in full. Brief announcements are given of courses intended for both graduates and undergraduates. For further description of the latter courses, see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue.

The attention of graduates of other Indiana Colleges is invited to the announcement on page 14 of ten fellowships recently established by the Board of Trustees, for such students. The value of these fellowships is \$200 each; they also carry with them exemption from contingent and library fees. For further information concerning the Graduate School, address.

THE DEAN OF THE GRADUATE SCHOOL,
Bloomington, Indiana.

Officers and Faculty of the Graduate School

COUNCIL

CARL H EIGENMANN, Ph.D., Professor of Zoölogy, Dean of the Graduate School.

ROBERT EDWARD LYONS, Ph.D., Professor of Chemistry.

ARTHUR LEE FOLEY, Ph.D., Professor of Physics.

ALBERT FREDERICK KUERSTEINER, Ph.D., Professor of Romance Languages.

ULYSSES GRANT WEATHERLY, Ph.D., Litt.D., Professor of Economics and Social Science.

ERNEST HIRAM LINDLEY, Ph.D., Professor of Philosophy and Psychology.

BURTON DORR MYERS, A.M., M.D., Professor of Anatomy.

SAMUEL BANNISTER HARDING, Ph.D., Professor of European History and Politics.

CARL WILHELM FERDINAND OSTHAUS, Professor of German.

SCHUYLER COLFAX DAVISSON, Sc.D., Professor of Mathematics.

WILL DAVID HOWE, Ph.D., Professor of English.

WILLIAM WESLEY BLACK, A.M., Dean of the School of Education.

EDGAR ROSCOE CUMINGS, Ph.D., Professor of Geology.

FRANK WILLIAM TILDEN, A.M., Associate Professor of Greek.

FRANK MARION ANDREWS, Ph.D., Associate Professor of Botany.

LILLIAN GAY BERRY, A.M., Associate Professor of Latin.

WILBUR ADELMAN COGHILL, A.M., Associate Professor of Astronomy.

GUIDO HERMAN STEMPLE, Ph.D., Associate Professor of Comparative Philology.

FACULTY

WILLIAM LOWE BRYAN, Ph.D., LL.D., President of the University.

HORACE ADDISON HOFFMAN, A.M., Professor of Greek.

JAMES ALBERT WOODBURN, Ph.D., LL.D., Professor of American History and Politics.

CARL H EIGENMANN, Ph.D., Professor of Zoölogy, and Director of the Biological Station.

ROBERT EDWARD LYONS, Ph.D., Professor of Chemistry.

ARTHUR LEE FOLEY, Ph.D., Professor of Physics.

DAVID MYERS MOTTIER, Ph.D., Professor of Botany.

ALBERT FREDERICK KUERSTEINER, Ph.D., Professor of Romance Languages.

ULYSSES GRANT WEATHERLY, Ph.D., Litt.D., Professor of Economics and Social Science.

ERNEST HIRAM LINDLEY, Ph.D., Professor of Philosophy and Psychology.

BURTON DORR MYERS, A.M., M.D., Professor of Anatomy.

SAMUEL BANNISTER HARDING, Ph.D., Professor of European History.

AMOS SHARTLE HERSHY, Ph.D., Professor of Political Science and International Law.

- *BERT JOHN VOS, Ph.D., Professor of German.
WILLIAM A. RAWLES, Ph.D., Professor of Political Economy.
CARL WILHELM FERDINAND OSTHAUS, A.M., Professor of German.
SCHUYLER COLFAX DAVISSON, Sc.D., Professor of Mathematics.
DAVID ANDREW ROTHROCK, Ph.D., Professor of Mathematics.
*WILLIAM J. MOENKHAUS, Ph.D., Professor of Physiology.
*LOUIS SHERMAN DAVIS, Ph.D., Professor of Chemistry.
WARNER FITE, Ph.D., Professor of Philosophy.
WILL DAVID HOWE, Ph.D., Professor of English.
WILLIAM WESLEY BLACK, A.M., Dean of the School of Education, and Professor of Elementary Education.
ELMER ELLSWORTH JONES, Ph.D., Professor of the History and Philosophy of Education.
CHARLES JACOB SEMBOWER, Ph.D., Professor of English.
EDGAR ROSCOE CUMINGS, Ph.D., Professor of Geology.
*WILLIAM FREDERICK BOOK, Ph.D., Professor of Educational Psychology.
GEORGE DAVIS MORRIS, A.M., Doct. d'Univ. (Paris), Associate Professor of French.
FRANK WILLIAM TILDEN, A.M., Associate Professor of Greek.
GUIDO HERMAN STEMPLE, A.M., Associate Professor of Comparative Philology.
ROLLA ROY RAMSEY, Ph.D., Associate Professor of Physics.
OLIVER W. BROWN, A.M., Associate Professor of Chemistry.
FRANK MARION ANDREWS, Ph.D., Associate Professor of Botany.
LILLIAN GAY BERRY, A.M., Associate Professor of Latin.
HENRY THIERS STEPHENSON, A.B., Associate Professor of English.
FRANK AYDELOTTE, A.M., B.Litt., Associate Professor of English.
WILBUR ADELMAN COGSHALL, A.M., Associate Professor of Astronomy.
ULYSSES SHERMAN HANNA, Ph.D., Associate Professor of Mathematics.
JOSHUA WILLIAM BEEDE, Ph.D., Associate Professor of Geology.
FRANK GREENE BATES, Ph.D., Associate Professor of Economics.
FRANK CURRY MATHERS, Ph.D., Associate Professor of Chemistry.
HUBERT GUY CHILDS, A.M., Associate Professor of Education.
CLARENCE EARL MAY, Ph.D., Associate Professor of Chemistry.
ROBERT DANIEL CARMICHAEL, Ph.D., Associate Professor of Mathematics.
MELVIN EVERETT HAGGERTY, Ph.D., Associate Professor of Psychology.
FERNANDUS PAYNE, Ph.D., Associate Professor of Zoölogy.
EUGENE LESER, Ph.D., Assistant Professor of German.
JAMES M. VAN HOOK, A.M., Assistant Professor of Botany.
RICHARD ASHLEY RICE, A.M., Assistant Professor of English.
WILL SCOTT, Ph.D., Assistant Professor of Zoölogy.
FRANK TENNEY STOCKTON, Ph.D., Assistant Professor of Economics and Social Science.
ALBERT LUDWIG KOHLMEIER, A.M., Instructor in History.
KENNETH POWERS WILLIAMS, Ph.D., Instructor in Mathematics.
EDGAR W. KOCH, A.M., Instructor in Physiology.
CLARENCE EDMUND EDMUNDSON, A.M., Instructor in Physiology.

*Absent on leave from August 1, 1913, to August 1, 1914.

General Statement of the Graduate School

Purpose and Administration. The Graduate School furnishes opportunities for advanced work leading to careers in higher education, and in certain lines of investigation. It does not offer work leading to professional degrees in Law or in Medicine.

The work of the School is a direct continuation of that of the College of Liberal Arts; as such it is the most advanced work in education undertaken by the State. The Graduate School stands, therefore, at the head of the University, and is the culmination of the public school system of the State.

The School is administered by the Council of the Graduate School. It is composed of members of the Faculty representing different fields of learning.

Not all departments of the University are at present equally equipped for extended graduate work. In recognition of this fact, the amount of graduate work offered by the different departments varies. Some departments offer work for the A.M. degree only, while others offer work leading to the degree of Ph.D.

Admission. Students holding a bachelor's degree in Arts, or in Science, from Indiana University, or the same degree, or its equivalent, from institutions of similar rank, are admitted to the Graduate School on presentation of satisfactory credentials, which should include a certificate of graduation and a transcript of the college record. Persons holding the bachelor's degree from institutions whose requirements are considered to lack a year, or more, of being the equivalent of the A.B. degree from this institution, are not admitted to the Graduate School. They may enter the College of Liberal Arts, and are referred to the Dean of the College for their standing. Holders of the A.B. degree, or its equivalent, from institutions whose requirements lack less than a year of being the equivalent of the A.B. degree from this institution, may be admitted to the Graduate School. In such cases, work in addition to the minimum of forty-five hours for the A.M. degree will be required. The amount will be determined in each case by the council of the Graduate School. In all cases, the student must complete to the satisfaction of the department of the major subject

the graduate work required in that department for the A.M., or the Ph.D., degree.

All graduate students will enroll at the beginning of each term, and those entering regularly organized classes will submit to the same regulations as undergraduate students. Work will in many cases be individual and not controlled by a recitation schedule. At the time of entrance to the Graduate School, the student must submit a plan of the entire work he wishes to present for the master's, or doctor's degree. This plan must be approved by the professor of the major subject and the Dean of the Graduate School. Graduate work done before filing such plan will ordinarily not be counted toward advanced degrees.

Fees. Students who are legal residents of the State of Indiana are charged a contingent fee of five dollars a term, and a library fee of one dollar a term.

These fees cover in part the cost of the physical maintenance of the University, and are not applied to the cost of tuition, which is provided wholly by the State.

Students not legal residents of the State of Indiana, will be charged a contingent and library fee amounting to twenty dollars a term. For each Summer half-term, half the fee will be charged. This fee is in lieu of the regular library and contingent fees noted above.

The laboratory fees in all courses are uniformly one dollar per credit hour.

The gymnasium fee, if the work in physical training is taken, is one dollar a term.

An examination fee of one dollar is charged for each make-up, or special, examination. This fee is paid to the Bursar; his receipt when presented to the proper instructor constitutes the authorization for holding the examination.

The fee for any degree is five dollars, and must be paid to the Bursar at least thirty days before graduation.

The Library. The library of Indiana University at present contains ninety-five thousand catalogued volumes. The selection of these books has been made with a view to facilitating instruction and research. The collection is a well-balanced one, but is especially strong in literary and scientific periodicals. The list of periodicals received and permanently kept on file by the library numbers about four hundred, and includes American, English, German, French, and, to a less extent, Italian, Spanish, and Swedish publi-

eations. The library is made thoroughly usable by a carefully prepared card catalogue, by indexes, and by other bibliographical aids. The library force consists of a librarian and twelve assistants, all of whom are at the service of any authorized user of the library.

In the library building are seminary rooms for the Departments of History, Economics, English, Philosophy, German, Romance Languages, Education, Latin, and Greek.

In addition to the central library, where the general literary and historical collections are housed, there are nine departmental collections, of varying sizes, kept in the different University buildings.

All books, with the exception of periodicals and books reserved for reference, may be drawn for home use. Each graduate student may draw five books for two weeks, with privilege of renewal.

The library is open Monday to Friday, from 7:45 a.m. to 10:00 p.m., and on Saturdays from 8:00 a.m. to 5:00 p.m.

DEGREES

Three advanced degrees, Master of Arts, Master of Science, and Doctor of Philosophy, are conferred by the University.

Master of Arts. The degree of Master of Arts may be conferred upon Bachelors of Arts of this University, or of any other institution of equivalent standing, or upon Bachelors of Science provided this degree is an alternative equivalent of the A.B. degree, following a residence at the University of a minimum of three terms and the completion of a minimum of forty-five hours of University credit.

Credits earned in excess of those required for the A.B., or the B.S., degrees, before the degree is conferred or a certificate of the completion of the work for the degree is issued, are not counted toward the A.M. degree, without special action of the Graduate Council before the work is done.

Thirty of the total of forty-five hours required for the A.M. degree must be in one department, or in closely allied departments. Fifteen hours must be distinctly graduate in character. There is no restriction as to the amount of work that may be carried during any term.

Graduates of this University may be given leave of absence for one term of the required year to pursue a specific investigation.

The work for the A.M. degree may all be done in Summer terms,

or half-terms, provided that not more than four half-terms be so counted and that the work for the degree be completed within five years.

Professional studies are not accepted for the graduate degrees, but research work on professional subjects may be accepted for these degrees at the option of the professor in charge of the major subject.

A thesis is required in all departments.

Freshmen courses shall not be counted on advanced degrees.

The first fifteen hours in beginning French and German, do not count on advanced degrees except by permission of the Graduate Council, on the written recommendation of the professor in charge of the major subject. The Council shall in such cases fix the amount of credit to be given. The amount of credit that a student may receive for elementary courses in other subjects is determined by the professor in charge of the major subject.

It is strongly urged that all students gain some proficiency in foreign modern language before entering the Graduate School. Credit in fifteen hours in modern foreign language, or the certified equivalent, is required of candidates for the A.M. degree. If the candidate does not meet this requirement before entering the Graduate School, he must obtain credit for fifteen hours of foreign language in addition to the regular forty-five hours required for the A.M. degree, unless by special act of the Graduate Council, partial credit is allowed for this work in accordance with the provisions noted in the preceding paragraph.

Master of Science. The degree of Master of Science may be conferred upon Bachelors of Science of Indiana University under the same conditions upon which the degree of Master of Arts is conferred on Bachelors of Arts.

Doctor of Philosophy. The degree of Doctor of Philosophy may be conferred upon graduates of this University, or of any institution of similar character and rank, upon the completion of an advanced course of study of not less than three years.

Each candidate for this degree will select a major subject consisting of the work of some one department or recognized subdivision of a department; and not less than two minors, at least one of which must be in some department related to, but distinct from that of the major subject.

The course for the degree will be pursued under the direction of a committee consisting of the heads of the departments in which the work is done. Its value will be determined by a final examina-

tion, and by the presentation of a satisfactory thesis. The thesis should usually embody original work upon some prescribed, or accepted, subject; it must always give evidence that the candidate is capable of forming an independent judgment upon the recent literature of his department.

A detailed statement of the work offered for the degree, indorsed by the professor in charge of the major subject, must be submitted to the Council of the Graduate School, not later than May 10 of the year in which the candidate presents himself for examination.

On the recommendation of the professor in charge of the major subject, and with the concurrence of the Council of the Graduate School, part of the three years' study required for this degree may be spent in residence at other universities.

The thesis of every candidate for the degree of Doctor of Philosophy shall be presented to the Council of the Graduate School on or before the first day of June of the year in which he is a candidate for the degree. The thesis must be indorsed by the head of the department as being in its final form, and ready for the press. If the candidate is recommended for the degree, arrangements must be made to deposit five printed copies of the thesis in the library.

Examinations of each candidate for this degree will be conducted by a committee consisting of all the instructors under whom graduate work has been taken, in the presence of such members of the Faculty of the School as care to attend.

At least one year before the final examination the candidate shall satisfy the professor in charge of the major subject of his ability to use French and German for purposes of investigation.

Application for Degrees. Application for advanced degrees must be filed with the Dean at the time of admission to the Graduate School. Application for the degree of Doctor of Philosophy must be on file at least one year before the candidate is admitted to the examination.

FELLOWSHIPS

Teaching Fellowships. A number of teaching fellowships are available for graduate students.

A Teaching Fellow is relieved from all term fees, and the fellowship carries with it an honorarium of between \$200 and \$500 annually. The highest amount will ordinarily be paid only if the incumbent is appointed for a third year. A Teaching Fellowship is primarily a recognition of scholarship. A portion of his time will

be required in the service of the department in which he is appointed; but not less than two-thirds of each Fellow's time must be devoted to work leading to the Doctorate in Philosophy.

Appointments are for one year, and do not necessarily imply a reappointment.

Lawrence Fellowship in Astronomy. The Lawrence Fellowship of the Department of Mechanics and Astronomy has been established by Mr. Percival Lowell, of the Lowell Observatory, upon the following terms and conditions:

1. The fellowship shall be known as the Lawrence Fellowship, in remembrance of the donor's mother, and is established in perpetuity, revocable, however, at any time at the will of the founder.
2. It shall be annually available and shall cover the college calendar year, that is, from commencement to commencement of the same.
3. The applicant shall be appointed by the Department, the donor reserving the right of finally passing upon the suitability of the candidate so presented.
4. The Fellow shall be given time and opportunity for an original thesis on some astronomical subject looking to the taking of a Master's degree, the nature of which shall be decided by the Director and the Fellow. But the Fellow shall be expected to give general assistance in the work of the observatory during the period of his fellowship.
5. The Fellowship will pay \$600 and the Fellow's traveling expenses to and from the Observatory at Flagstaff, Ariz.; and a furnished room at the Observatory, shall be free to the Fellow's use.

Fellowships for Graduates of Other Indiana Colleges. The Trustees of Indiana University, at their March meeting, 1910, established ten Graduate Fellowships of an annual value of \$200 each, with exemption from term fees, to be held by graduates of other colleges in the State. In awarding these fellowships the policy will be to assign them to the most promising students, irrespective of the special field of study in which they wish to work, or the particular institutions from which they come. As between cases of equal merit, however, attention will be given to securing a distribution of the awards among different departments of study and different colleges of the State.

Applicants for these fellowships should file a statement of their educational history and of their plans with the Dean of the Graduate School. They should indicate in this statement the major subject which they wish to pursue, and give a transcript of their college record. They should also present at this time recommendations from their instructors, and such other evidences of their fitness as they can offer. Applications will be received up to April 1 of each year.

Applications will be referred in each case to the department concerned for a decision upon the respective merits of the applicants in that department. On the basis of the departmental reports, the Graduate Council will recommend to the Trustees the most eligible candidate for appointment.

These fellowships are not open to students doing professional work in Law or in Medicine.

In incumbents will not ordinarily be eligible for reappointment, but they will be eligible for appointment to teaching fellowships.

For application blanks, and further information, address the Dean of the Graduate School.

Research Fellowships. There are, besides the fellowships mentioned above, research fellowships, which are awarded to students who have shown marked ability and who desire to investigate definite problems in which they are interested. Each case is decided on its merits. The compensation, ranging from \$300 to \$500, is fixed by the Board of Trustees, on the recommendation of the Graduate Council.

Special Rules Concerning Fellows. Holders of fellowships are required to render some service to the University and are not permitted, without the special permission of the Graduate Council, to do work for remuneration.

UNIVERSITY ORGANIZATIONS

The Graduate Club. The Graduate Club was founded in 1910 to establish closer relations among the graduate students, and between graduate students and the members of the Faculty. Through closer association and acquaintanceship, the club aims to foster solidarity of interest. The meetings are in part social, and in part devoted to the presentation of papers by the members of the club, giving the results of some investigation carried on by the author. In this way students in the different departments are made acquainted with the work in various lines of research carried on in the University. Occasionally addresses are given by visitors of prominence. Membership in the club is open to all Graduates.

Sigma Xi. Sigma Xi is an organization especially for scientific students. It is a chapter of a national scientific fraternity, to which members of the Faculty, Graduates, and Seniors may be elected. Its object is to encourage investigation in science, pure and applied.

Phi Beta Kappa. Phi Beta Kappa is a chapter of the oldest Greek-letter fraternity, founded in 1776 for ‘the promotion of scholarship and friendship among students and graduates of American colleges.’ It is today no longer a secret society, but an honor society, having for its special aim the encouragement of liberal culture. At Indiana University, a certain number of Seniors, not over ten per cent, are elected each year, partly at Thanksgiving and partly at Commencement. The membership includes also certain members of the Faculty, and a few other chosen directly from the ranks of the alumni. The chapter was established on Foundation Day, 1911.

Departmental Clubs. The following departments have special departmental clubs: Geology, Zoölogy, Physics, Chemistry, History, Philosophy, English, Mathematics, German, French, Spanish, and Comparative Philology. Membership in these clubs is open to faculty members of the department, Graduates, and undergraduates. The purpose of the clubs is to discuss topics of interest to members, and to promote social intercourse.

Departments and Graduate Courses of Instruction, 1913-14

* * * In the following list are included many courses which are open alike to Graduates and advanced underclassmen. Only a skeleton announcement of these is here made; for full description see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue. Strictly graduate courses are described in full. The more elementary courses are not listed here at all.

DEPARTMENT OF GREEK

HORACE A. HOFFMAN, Professor.

FRANK W. TILDEN, Associate Professor.

The time that may be at present profitably devoted to graduate work in Greek is one year, leading to the degree of A.M. A thesis on some subject connected with the seminary work of the year is required for the degree.

All candidates for A.M., with Greek as major subject are recommended to take at least fifteen hours in Latin, in advance of the Latin taken in the undergraduate study.

Courses 9, 12, and 13, or any part of these courses, are also open as minors to Graduates who have not already had as part of their undergraduate study the work which they take in their courses for graduate credit.

The Department is well equipped for doing satisfactory work leading to the degree of Master of Arts. Besides the most important reference books, cyclopedias, dictionaries, lexicons, indexes, and standard editions of Greek writers, an effort has been made to build up an especially good collection of works treating of Euripides, since seminary work is generally given in that author. The Department has the chief older editions as well as nearly all of the later ones, and many special works bearing on Euripides.

The Library contains the most important classical journals, among them complete sets of "The American Journal of Philology;" "The American Journal of Archaeology;" "The Classical Review;" Chicago, Cornell, and Harvard "Studies;" "Hermes;" "Jahrbücher für classische Philologie;" "Mitteilungen d. Deutsch. arch. Inst. in Athen;" "Philologus;" "Rheinisches Museum;" "Journal of Hellenic Studies."

Among the most valuable works in the field of archaeology and

art the following may be named: 'Antike Denkmäler;' 'Ausgrabungen von Olympia;' 'Carapanos;' 'Dodona;' Hamdey-Bey and Reinach's 'Nécropole à Sidon;' Homolle's 'Fouilles de Delphes;' Ohnefalsch-Richter's 'Cypros, die Bibel und Homer;' Overbeck's 'Griechische Kunstmythologie;' Stackelberg's 'Die Gräber der Hellenen;' Fenger's 'Dorische Polychromie;' Hawe's 'Gournia;' Penrose's 'Principles of Athenian Architecture;' and the publications of the American and British Schools of Athens, and of the Egyptian Exploration Fund. Among the works on inscriptions and epigraphy the following may be mentioned: 'Corpus Inscriptionum Graecarum;' 'Corpus Inscriptionum Atticarum;' 'Inscr. Graec. Septentrionalis, Italiae, Pelopon., Insularum, etc.,' 'Die Inschriften von Priene,' Die Inschriften von Pergamon, and the important writings of such authorities as Klein, Kretschmer, Meisterhans, etc. For palaeography and the study of the papyri, the following are accessible: Grenfell, Hunt, Kenyon, Mahaffy, Mayser, Mitteis, Thompson, and Wilkin. In the important field of vase-painting, the Library contains many valuable works. Among the most noteworthy are: Benndorf's 'Griechische und Sisisilische Vasenbilder;' Collignon and Rayet's 'Historie de la Céramique grecque;' Dechelette's 'Les Vases céramiques ornés de la Gaule romaine;' Furtwängler and Loeschke's 'Mykenische Vasen', and 'Mykenische Thongefäße;' Furtwängler and Reichhold's 'Griechische Vasenmalerei;' Harrison and McColl's 'Types of Greek Vases', and various books by Gardner, Huddilston, Klein, Kretschmer, Murray, Smith, and Walters.

The Department also owns upwards of 900 photographs of landscapes, buildings, and works of art in Greece, Italy, and Sicily; and has many lantern-slides, busts, casts, a model of the Aeroplis at Athens, and a series of reproductions of the famous Tanagra Figurines.

Following are the courses open to Graduates in the Department. The more elementary courses are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue:

9. Lyric and Dramatic Poetry. Associate Professor TILDEN.
Fall, Winter, and Spring terms, daily, at 9:00.
Not given in 1914-15.
12. Philosophical Prose. Professor HOFFMAN.
Fall, Winter, and Spring terms, T. Th., at 10:00.
13. Historical and Rhetorical Prose. Associate Professor TILDEN.
Fall, Winter, and Spring terms, M. W. F., at 10:00, or, at hours to be appointed.

- 15a. Graduate Seminary. Euripides is the author usually studied, but other authors may be selected. In 1912-13 Plato's Republic was the work studied. Professor HOFFMAN.
 Fall, Winter, and Spring terms, Th., at hours to be appointed.
- 15b. Graduate Seminary: In 1912-13 Ideal Forms of Government were studied from Plato to modern times. Associate Professor TILDEN.
 Fall, Winter, and Spring terms, F., at hours to be appointed.

DEPARTMENT OF LATIN

LILLIAN G. BERRY, Associate Professor.

The work of the Department leading to investigation lies in the fields of Latin Literature, Roman Institutions, Epigraphy, Textual Criticism, Latin Syntax, and the Topography and Monuments of Ancient Rome. In addition to the promotion of pure scholarship, the work is intended to meet the needs of those making the teaching of Latin in high schools and colleges their profession, whether or not they are candidates for a degree, not by instruction in pedagogical methods, but by a deepening of their knowledge of and a quickening of their interest in Latin.

Students entering upon the graduate study of Latin must previously have completed the courses required of a Major in the Department, or their equivalent. Courses 28 and 32 will be required of all students who are graduates of institutions which do not offer similar courses as a part of the undergraduate preparation. If Courses 33 or 35, or both, have been taken in the undergraduate courses, Course 34 should be made a part of the graduate work, and *vica versa*.

A continuous year of residence is advisable for profitable graduate work, but in special cases approved by the Department, the work for the A.M. degree may be done in three summers.

Following are courses open to Graduates in the Department: The more elementary courses are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue.

28. Paleography and Criticism. An introduction to the use of critical editions of Latin authors. In 1912-13 a special study was made of the first book of Caesar's 'Gallic War.' This course is recommended to persons expecting to teach Latin, and will be required after this date of students admitted to the Third year with advanced standing from other colleges. Mr. MENK.

Fall, Winter, and Spring terms, T., at 10:00.

Johnston, 'Latin Manuscripts,' Meusel, 'Caesar,' Meusel (or Menge Preuss) 'Lexicon.'

32. Epigraphy. The reading and interpretation of some five hundred Latin inscriptions; a study of the *Corpus Inscriptionum* through the investigation of special topics dealing with questions of Roman political institutions, public and private life, colloquial Latin, and historical Latin Grammar. Associate Professor BERRY.

Fall, Winter, and Spring terms, T., at 9:00.

- [33. The Prose Writers of the Republic. Selections from Cato, Sallust, Cicero, and Hirtius, with the critical study of the text of one of these authors so far as it is read in the class.

Courses 33 and 34 are given in alternate years.]

Omitted in 1913-1914.

34. The Poets of the Republic. Selections from Plautus, Terence, Lucretius, and Catullus, with the critical study of the text of some one of these authors so far as read in the class. Students are expected to be able to read German.

Fall, Winter, and Spring terms, M. W. F., at 9:00.

35. Latin of the Empire. Selections from Tacitus, Suetonius, Juvenal, and Martial will be studied with reference to their portrayal of political and social conditions under the Early Empire. Associate Professor BERRY.

41. Topography and Monuments of Ancient Rome. This subject is studied from the sources, ancient and medieval: references in Greek and Latin literature, inscriptions, the Capitoline Plan, Regionary Catalogues, coins, reliefs, medieval itineraries, maps, and sketches. The information obtained from these sources is studied in the light of recent researches. Associate Professor BERRY.

Fall, Winter, and Spring terms, at an hour to be arranged.

Platner, 'Ancient Rome.'

Open to Graduates only.

42. Readings in Latin Literature. The work in this course varies from year to year. It includes wide reading in authors of all periods, together with the first hand investigation of some problem connected with the line of reading being followed. In 1913-1914 a study has been made of the Latin Romance, its origin and history; and characteristics as shown in Petronius and Apuleius. Associate Professor BERRY.

Fall, Winter, and Spring terms, T., 2:00 to 3:50.

Open to Graduates only.

43. Advanced Composition. This course is intended especially for teachers, but may be taken by any persons who need practice in writing Latin.

Fall, Winter, and Spring terms, once a week, at an hour to be arranged.

Open to Graduates and teachers of Latin.

50. Seminary. The critical study of the text of some standard author, with incidental investigation of problems in syntax, style, prosody, and so forth. In past years, Caesar, Sallust, Tacitus, and Plautus have been made the subjects of similar work.

Fall, Winter, and Spring terms, M., 2:00 to 3:50.

Open to Graduates only.

DEPARTMENT OF ROMANCE LANGUAGES

ALBERT F. KUERSTEINER, Professor of Romance Languages.

GEORGE D. MORRIS, Associate Professor of French.

CHARLES A. MOSEMILLER, Associate Professor of Romance Languages.

The Department of Romance Languages offers one year of graduate work, leading to the M.A. degree.

The Library is well equipped with works in French criticism and with texts of the eighteenth century, and has a fair selection of other works of modern French literature. It contains, also, all of the volumes so far published by the 'Société des anciens textes français,' and a good collection of French grammars and dictionaries. The following periodical publications are on file:

Archiv für das Studium der neueren Sprachen und Literaturen.

Bibliothek des litterarischen Vereins in Stuttgart.

Euphorion.

Französische Studien.

Germanisch-Romanische Monatsschrift.

Literaturblatt für germanische und romanische Philologie.

Modern Language Notes.

Modern Language Review.

Modern Philology.

Publications of the Modern Language Association of America.

Revue Bleue.

Revue de Cours et Conférences.

Revue des deux Mondes.

Revue des Langues Romanes.

Revue de Paris.

Revue de Philologie française et de Littérature.

Romania.

Zeitschrift für französische Sprache und Litteratur.

Zeitschrift für romanische Philologie.

Following are the courses open to Graduates in the Department. The more elementary courses are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue:

- 7. Seventeenth Century Poetry and Drama. Professor KUERSTEINER.
Fall, Winter, and Spring terms, M. W. F., at 9:00.
- [24. Eighteenth Century Poetry and Drama. Professor KUERSTEINER.
Fall, Winter, and Spring terms, M. W. F., at 9:00.]
Omitted in 1914-15.
- [10. Nineteenth Century: The Romantic Period. Associate Professor MORRIS.
Fall, Winter, and Spring terms, M. W. F., at 10:00.]
Omitted in 1914-15.

27. Nineteenth Century. The Realistic Period. Associate Professor MORRIS.
 Fall, Winter, and Spring terms, M. W. F., at 10:00.
 Omitted in 1913-14.
- [32. Contemporary Fiction. Associate Professor MORRIS.
 Fall, Winter, and Spring terms, T. Th., at 10:00.
 Omitted in 1914-15.]
33. Contemporary Drama. Associate Professor MORRIS.
 Fall, Winter, and Spring terms, T. Th., at 10:00.
26. Advanced Composition. Associate Professor MOSEMILLER.
 Fall, Winter, and Spring terms, T. Th., at 2:00.
13. Old French. Reading of texts; study of Old French phonology and morphology; exercises in tracing words from classical and from popular Latin to Modern French. Lectures. Associate Professor MOSEMILLER.
 Fall, Winter, and Spring terms, M. W. F., at 11:00.
 Paris, 'Extraits de la Chanson de Roland'; Suchier, 'Aucassin et Nicolette' (French edition); Constans, 'Chrestomathie de l'ancien français'; Paris-Langlois, 'Chrestomathie du moyen-âge'; Paris-Langlois, 'Extraits des chroniqueurs français.'
 Open to students who have studied French and Latin.
34. Vulgar Latin. Lectures on the phonology and morphology of Vulgar Latin; relation to Classical Latin and to the Romance Languages. Professor KUERSTEINER.
 Fall and Winter terms, T. Th., at 11:00.

DEPARTMENT OF GERMAN

BERT J. Vos, Professor.

CARL W. F. OSTHAUS, Professor.

EUGENE LESER, Assistant Professor.

In combination with the Department of Comparative Philology, which gives courses in Gothic, Old High German, and Old Norse, the Department at present offers about thirty-five hours of graduate work. Students entering upon the graduate study of German must previously have completed the courses required for a major in the Department, or their equivalent. Courses 27 and 29 are, however, open to students of other departments than German upon the completion of the work of the Junior year. The library is well equipped with books for the special study of Classical and Nineteenth Century German literature.

The list of complete sets of periodicals and of current publications received includes the following, those marked with an asterisk representing complete sets:

Alemannia.

Allgemeine Zeitung. München.

*Archiv für das Studium der neueren Sprachen und Literaturen.

- *Archiv für Literaturgeschichte.
- *Arkiv för nordisk Filologi.
- *Beiträge zur Geschichte der deutschen Sprache und Literatur.
- *Bibliothek des literarischen Vereins in Stuttgart.
- *Columbia University Germanic Studies.
- Das Literarische Echo.
- *Euphorion.
- *Forschungen zur neueren Literaturgeschichte, herausgegeben von F. Muncker.
- German-American Annals.
- *Germanisch-Romanische Monatsschrift.
- *Goethe-Jahrbuch.
- *Indogermanische Forschungen.
- Jahrbuch des freien deutschen Hochstifts.
- *Jahrbuch der Grillparzer-Gesellschaft.
- Jahrbuch des Vereins für niederdutsche Sprachforschung.
- *Jahresbericht über die Erscheinungen auf dem Gebiete der Germanischen Philologie.
- *Jahresberichte für neuere deutsche Literaturgeschichte.
- *Journal of English and Germanic Philology.
- Korrespondenzblatt des Vereins für niederdeutsche Sprachforschung.
- *Literaturblatt für germanische und romanische Philologie.
- *Modern Language Notes.
- *Modern Language Review.
- *Modern Philology.
- *Monatshefte für deutsche Sprache und Pädagogik.
- *Publications of the Modern Language Association of America.
- *Quellen und Forschungen.
- *Revue germanique.
- *Veröffentlichungen des Schwäbischen Schiller-Vereins.
- *Vierteljahrsschrift für Literaturgeschichte.
- Zeitschrift des Allgemeinen deutschen Sprachvereins.
- *Zeitschrift des Vereins für Volkskunde.
- Zeitschrift für Bücherfreunde.
- *Zeitschrift für deutsches Altertum.
- Zeitschrift für deutsche Mundarten.
- *Zeitschrift für deutsche Philologie.
- Zeitschrift für den deutschen Unterricht.
- *Zeitschrift für deutsche Wortforschung.
- Zeitschrift für die österreichischen Gymnasien.
- *Zeitschrift für vergleichende Literaturgeschichte.

For Gothic and Old High German, see Courses 4 and 9 of the Department of Comparative Philology.

Following are the courses open to Graduates in the Department. The more elementary courses are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue:

14. German Usage. Assistant Professor LESER.
Winter and Spring terms, T. Th., at an hour to be appointed.
30. Studies in the recent German Drama. Professor OSTHAUS.
Fall term, M. W. F., at an hour to be appointed.
28. Journal Club. This course is introductory to the work of the German Seminary. Members make reports upon the contents of current numbers of journals devoted to German literature and philology, and are trained in the use of important works of reference. Two to five hours' credit. Professor Vos.
Fall term, two hours weekly, at an hour to be appointed.
22. German Seminary: Goethe as a Lyric Poet. Conducted mainly in German. Two to five hours' credit. Professor Vos.
Winter and Spring terms, two hours weekly, at an hour to be appointed.
Open to students who have completed Course 28.
27. Middle High German. Outline of the phonology, accidence, and syntax. Reading of selections from the lyric poets, the popular and court epic. Conducted in German. Professor Vos.
Fall and Winter terms, two hours weekly, at an hour to be appointed.
29. History of the German Language. The relation of German to other Germanic languages; the dialect divisions of Modern German; origins of the literary language; changes since the middle period; history of German orthography. Conducted in German. Professor Vos.
Spring term, two hours weekly, at an hour to be appointed.
Behaghel, 'Die deutsche Sprache' ('Das Wissen der Gegenwart,' Band 54).

DEPARTMENT OF COMPARATIVE PHILOLOGY

GUIDO H. STEMPFL, Associate Professor.

Course 8 will be given by MR. EDGAR A. MENK of the Department of Latin

The graduate courses offered below will be extended as required. They may be supplemented by certain of the courses listed as undergraduate, as well as by certain courses given in the other language departments and in History, Social Science (Descriptive Sociology), Philosophy, and English. The time that can profitably be spent here in graduate study in Philology is at present about two years.

The collection of American, British, and German periodicals devoted to Indo-European philology is practically complete.

The more elementary courses of the Department are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue.

- [5. Comparative Philology of the Classical Languages. An advanced course in the science of language and Indo-European philology. Each student will emphasize the particular language in which he has had special training. Associate Professor STEMPER.
 Fall, Winter, and Spring terms, M. W. F., at 10:00.
 Giles, 'Manual of Comparative Philology for Classical Students.' Open to students who have passed in Courses 2 and 3, and in thirty hours of language, and to advanced students in Latin or Greek]. Omitted in 1914-15.
- [4. Gothic. Grammar and reading; phonology of the early Germanic languages. Associate Professor STEMPER.
 Fall, Winter, and Spring terms, T. Th., at 10:00.
 Wright, 'Grammar of the Gothic Language'; Speitberg, 'Die gotische Bibel.'
 Open to students who have passed in Course 2 and in thirty hours of language, and to others at the option of the instructor.
 Given every third year; see Courses 9 and 10.]
 Not given in 1914-15. Given every third year, following Course 10; see Courses 9 and 10.
8. Sanskrit. Grammar and reading; comparative phonology of the languages. Mr. MENK.
 Fall, Winter, and Spring terms, M. W. F., at 10:00.
 Perry, 'Sanskrit Primer' (or Lamman, 'Sanskrit Reader'); and Whitney, 'Sanskrit Grammar.'
 Open to advanced students in Latin or Greek at the option of the instructor.
- [9. Old High German. Elements of the grammar, reading of selected texts, study of dialectal divergence. The method will be both comparative and historical. Associate Professor STEMPER.
 Fall, Winter, and Spring terms, T. Th., at 10:00.
 Wright, 'Old High German Primer'; Braune, 'Althochdeutsche Grammatik'; Braune, 'Althochdeutsches Lesebuch.'
 Open to students on same conditions as Course 4.]
 Given every third year, following Course 4; see Courses 4 and 10.
 Not given in 1914-15.
10. Middle High German. (1) Fall term: Elements of the grammar, reading of easy texts, and study of the development of the German language. (2) Winter and Spring terms: Nibelungenlied, with special study of the popular epic.
 Fall, Winter, and Spring terms, T. Th., at 10:00.
 Wright, 'Middle High German Primer'; Paul, 'Mittelhochdeutsche Grammatik'; Robertson, 'Der arme Heinrich'; Zarncke, 'Das Nibelungenlied.'
 Open to students on same conditions as Course 4.
 Given every third year, following Course 9; see Courses 4 and 9.
- [11. Old Norse. Introduction to the language, and the reading of texts that throw light upon the popular literature of England and Germany.
 Fall, Winter, and Spring terms, M. W. F., at 10:00.

Sweet, 'Icelandic Primer'; Hensler, 'Alt isländisches Elementarbuch'; selected texts.

Open to students who have passed in fifteen hours of Germanic philology and to others at the option of the instructor.] Omitted in 1914-15.

15. Seminary. Some topic in grammatical theory or the development of some English usage will be made the basis of study. Associate Professor STEMPLE.

Fall, Winter, and Spring terms, W., 2:00 to 3:50.

DEPARTMENT OF ENGLISH

WILL D. HOWE, Professor.

CHARLES J. SEMBOWER, Professor.

HENRY T. STEPHENSON, Associate Professor.

FRANK AYDELOTTE, Associate Professor.

RICHARD A. RICE, Assistant Professor.

The Department is prepared to offer research work leading to the A.M. and Ph.D. degrees, in the following periods: Elizabethan literature, the literature of the Seventeenth Century, of the Eighteenth Century, and of the first half of the Nineteenth Century.

The University library contains the chief Society publications; for example, The Early English Text Society, Chaucer Society, Spenser Society, Shakspere (Old and New), Shakespeare Jahrbuch, Huth Library, Molone. Substantial additions are being made each year. Besides these publications, all the principal reviews and journals are received.

For the degree of A.M., the candidate should have had in his undergraduate work the equivalent of forty-five hours of English, and should, in his graduate work, pursue a course restricted to three subjects, approved by the Department of English.

For the degree of Ph.D., the candidate will be expected to do at least two full years' work in residence after the degree of A.M. He must be able to read German and French, and to do a piece of independent research which will be acceptable to the Department.

The following courses are open to Graduates in the Department. The most elementary courses are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue.

16. Shakspere. Associate Professor STEPHENSON.
Fall, Winter, and Spring terms, two hours a week.
31. The Art of Poetry. Associate Professor RICE.
Fall and Winter terms, three hours a week.
33. Literary Criticism. Professor HOWE.
Fall, Winter, and Spring terms, two hours a week.

35. Seminary in Composition. Professor SEMBOWER.
Hours and credit to be arranged.
42. Chaucer. Associate Professor AYDELOTTE.
Fall, Winter, and Spring terms, two hours a week.
44. The Age of Milton and the Age of Dryden (1625-1700). Professor SEMBOWER.
Fall, Winter, and Spring terms, three hours a week.
45. The Eighteenth Century (1700-1770). Assistant Professor RICE.
Fall, Winter, and Spring terms, two hours a week.
56. Contemporary Drama. MR. JENKINS.
Fall and Winter terms, two hours a week.
- [50. Research Course in Anglo-Saxon Literature. An investigation of sources and authorities; reading of Anglo-Saxon literature.
Prerequisite. Comparative Philology 2. Five hours of credit may be secured in this course each term.]
Omitted in 1913-14.
- [51. Research Course in Middle English Literature. Reading of much prose, many romances, and some of the most important poems: study of sources and relationship. It is expected that students who take this course will be able to read Middle English, German, and French. Five hours of credit may be secured in this course each term.]
Omitted in 1913-14.
52. Elizabethan Literature. Studies in the various forms of literature of the Elizabethan Age; investigation of sources and relationships. The work may deal either with individual authors or special literary forms. A reading knowledge of German and French is required. Five hours of credit may be secured in this course each term. Associate Professors STEPHENSON and AYDELOTTE.
53. Seventeenth Century Literature. A research course in the literature from 1625-1700. Reading knowledge of German and French is required. Five hours of credit may be secured in this course each term. Professor SEMBOWER.
54. Eighteenth Century Literature. Studies in one of the fields of literature—the poetry, the drama, the essay, or the novel. Reading knowledge of German and French is required. Five hours of credit may be secured in this course each term. Professor HOWE and Assistant Professor RICE.
55. Research Studies in the Literature of the Nineteenth Century. Discussion of the various literary forms and study of the relationship between English and contemporary European literature. Reading knowledge of German and French is required. Five hours of credit may be secured in this course each term. Professors HOWE and SEMBOWER.

DEPARTMENT OF HISTORY AND POLITICAL SCIENCE

JAMES A. WOODBURN, Professor of American History and Politics.

SAMUEL B. HARDING, Professor of European History.

AMOS S. HERSHEY, Professor of Political Science.

ALBERT L. KOHLMAYER, Instructor in History.

The Department is prepared to offer research work leading to A.M. and Ph.D. degrees in the following fields: American Colonial History, the American Civil War and Reconstruction and the history of American political parties, English History in the Seventeenth and Nineteenth Centuries, the French Revolution, Diplomatic History, Political Philosophy, International Law, and the History of Indiana during the Middle Period, 1820-1860. In each of these fields good library collections are already at hand, to which constant additions are being made.

The following are among the periodicals and continuation sets at the disposal of advanced students of history and political science:

- American Historical Association, Annual Reports, 1884-
- American Historical Review, 1896-
- American Journal of International Law, 1907-
- American Magazine of Civics, 1894-6.
- American Political Science Review, 1905-
- Annales des Sciences Politiques, 1899-
- Annals of the American Academy of Political Science, 1890-
- Annuaire Historique, 1819-50.
- Annual Register, 1791-1828.
- Archives Diplomatiques, 1905-
- Camden Miscellany, 1847-
- Camden Society Publications, 1838-
- Columbia University Studies in History, Economics, and Public Law, 1891-
- DeBow's Review, 1846-68.
- English Historical Review, 1889-
- Historical Manuscripts Commission Reports (Great Britain), 1870-
- Gulf States Historical Magazine, 1902-04.
- Hansard's Parliamentary Debates, 1812-1897.
- Harvard Historical Studies, 1896-
- Historische Zeitschrift, 1888-
- Iowa Journal of History and Politics, 1903-
- Johns Hopkins University Studies in History and Political Science, 1883-
- Magazine of American History, 1880-93.
- Niles' Weekly Register, 1811-49.
- Political Science Quarterly, 1886-
- La Révolution Française, 1899-
- Revue de Droit International et de Legislation Comparée, 1896-
- Revue Générale de Droit International et de Legislation Comparée, 1896-
- Revue Historique, 1895-

- Revue Politique et Litteraire; Revue Bleue, 1880-
Royal Historical Society Transactions, 3d series, 1907-
South Atlantic Quarterly, 1903-
University of Missouri Studies, 1901-
University of Pennsylvania Publications: Series in Political Economy and
Public Law, 1889-
University of Wisconsin Bulletin: Economics, Political Science, and His-
tory series, 1894-99.
Virginia Magazine of History and Biography, 1894-
William and Mary College Quarterly Historical Magazine, 1902-
Zeitschrift für Völkerrecht und Bundesstaatsrecht, 1906-

Candidates for the degree Ph.D., with History as major subject, will be examined on each of the following fields: (1) Ancient History, with emphasis at the option of the candidate in either Greek or Roman History; (2) Mediæval and Modern History, with emphasis in either the mediæval or the modern field; (3) English History, with emphasis either on the period before 1485, or after that date; and (4) American History, with chief emphasis either on the period before 1783, or after that date. The examination on the special field of the thesis will naturally be more searching than elsewhere.

Following are the courses open to Graduates in this Department. The more elementary courses are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue.

8. American Colonial History to 1760. Mr. KOHLMEIER.
Fall, Winter, and Spring terms, T. Th., at 8:00.
18. American Parties and Party Leaders. Professor WOODBURN.
Fall, Winter, and Spring terms, T. Th., at 9:00.
6. English History. Professor HARDING.
Fall, Winter, and Spring terms, M. W. F., at 10:00.
9. Renaissance and Reformation. Professor HARDING.
Fall, Winter, and Spring terms, T. Th., at 11:00.
10. History of Modern Europe, from about 1750 to the Present Time.
Professor HERSHAY.
Fall, Winter, and Spring terms, T. Th., at 11:00.
22. American Diplomatic History.
Fall, Winter, and Spring terms, T. Th., at 8:00.
- 23a. Government and Parties of England. Professor HERSHAY.
Fall term, M. W. F., at 11:00.
- 23b. Government and Parties of Continental Europe. Professor HERSHAY.
Winter term, M. W. F., at 11:00.
24. History of Political Ideas and Theory of the State. Professor
HERSHAY.
Spring term, M. W. F., at 11:00.

25. Public International Law. A course based upon the instructor's "Essentials in International Law," with lectures, and the study of cases and illustrations drawn especially from the Russo-Japanese War. Professor HERSHLEY.
Fall, Winter, and Spring terms, T. Th., at 1:00.
13. France in the Middle Ages. A study of the institutions of mediaeval France, and of the processes whereby the feudal type of society was transformed into the modern state. Lectures, collateral reading, and reports on assigned topics. Professor HARDING.
Fall, Winter, and Spring terms, T. Th., at 10:00.
16. Historical Method. The principles of historical investigation and criticism. A preparation for research in history. Professor HARDING.
Fall term, W., 3:30 to 5:30.
17. Historians and History Writing in the Nineteenth Century. A critical survey of modern historical literature, with special studies of selected German, French, English, and American writers. Professors HARDING and WOODBURN.
Winter and Spring terms, W., 3:30 to 5:30.
30. Western History, with Especial Reference to Indiana. A study of the political, economic, and cultural development of the Middle West. Dr. ESAREY.
Fall, Winter, and Spring terms, M. W. F., at 8:00.
- 20a. Seminary in English History. Individual research work, under the guidance of the instructor, on some subject connected with modern English history. The results of the investigations are presented from time to time as reports and are finally embodied in papers in form suitable for publication, of which a copy must be left with the Seminary. Professor HARDING.
Fall, Winter, and Spring terms. Hours for individual conference to be arranged.
- 20c. Seminary in American Constitutional and Political History. Study of sources, reports of investigations, and thesis work. Professor WOODBURN and Dr. ESAREY.
Fall, Winter, and Spring terms, M., 4:00 to 5:30.
- 20d. Seminary in International Law and Diplomacy. Research work and the study of important topics, more especially of present day problems. During recent years such subjects were selected as the Alabama Claims, the Panama Affair, the causes of the Russo-Japanese War, the 'Open Door' policy in China, and the genesis of the Monroe Doctrine. Professor HERSHLEY.
Fall, Winter, and Spring terms, at hours to be appointed.

DEPARTMENT OF ECONOMICS AND SOCIAL SCIENCE

ULYSSES G. WEATHERLY, Professor of Economics and Social Science.

WILLIAM A. RAWLES, Professor of Political Economy.

FRANK G. BATES, Associate Professor of Economics and Social Science.

FRANK T. STOCKTON, Assistant Professor of Economics and Social Science.

JOHN A. LAPP, Lecturer on Social Legislation.

While the graduate work of the Department is primarily intended to cover one year and to lead to the Master's degree, it may in certain cases be extended to cover the requirements for the Doctor's degree. In the following special fields the courses of instruction are ample and the research materials adequate: Economic History, Economic Theory, Money and Finance, Statistics and Statistical Method, Historical and Descriptive Sociology, Sociological Theory, Social Technology, and Municipal Problems.

The Department library is equipped with full sets of the most important public documents, both state and national, and has complete sets of most of the American, English, French, and German economic periodicals. Advanced students have direct access to these materials, and also to the special collections relating to charitable and correctional institutions. The Department is affiliated with the Charity Organization Society of Indianapolis, with the Social Service Department of the School of Medicine, and with the Indiana Bureau of Legislative and Administrative Information. Through these agencies properly qualified students are enabled to come into direct contact with the social and economic problems of Indianapolis, and of the State. Constant use is also made of the statistical materials in the various departments of the State government.

The more elementary courses of the Department are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue.

6. Money, Banking, and the Money Market. Assistant Professor STOCKTON.
Fall, Winter, and Spring terms, T. Th., at 8:00.
3. Public Finance. Assistant Professor STOCKTON.
Fall, Winter, and Spring terms, M. W. F., at 8:00.
9. Transportation. Professor RAWLES.
Spring term, M. W. F., at 9:00.
5. Advanced Political Economy. Assistant Professor STOCKTON.
Fall, Winter, and Spring terms, M. W. F., at 11:00.
11. Municipal Problems. Associate Professor BATES.
Fall, Winter, and Spring terms, T. Th., at 11:00.

31. Economic and Social Legislation. Associate Professor BATES and Mr. LAPP.
Fall, Winter, and Spring terms, M. W. F., at 11:00.
- 20a. Descriptive Sociology. The Basis of Society. Professor WEATHERLY.
Fall term, T. Th., at 10:00.
- 20b. Descriptive Sociology: Social Evolution. Professor WEATHERLY.
Winter term, Th., at 10:00.
- 20c. Descriptive Sociology: Population. Professor WEATHERLY.
Spring term, T. Th., at 10:00.
- 4a. Social Pathology: Poverty and Charities. Professor WEATHERLY.
Fall term, M. W. F., at 10:00.
- 4b. Social Pathology: Crime and Penology. Professor WEATHERLY.
Winter term, M. W. F., at 10:00.
- 4c. Social Pathology: Special Problems. Professor WEATHERLY.
Spring term, M. W. F., at 10:00.
10. Socialism and Social Reform. Professor WEATHERLY.
Fall term, T. Th., at 11:00.
- 7a. General Sociology: Social Forces. Professor WEATHERLY.
Winter term, T. Th., at 11:00.
- 7b. General Sociology: Social Efficiency. Professor WEATHERLY.
Spring term, T. Th., at 11:00.
8. Seminary in Economics and Sociology. Professors WEATHERLY and RAWLES, Associate Professor BATES, and Mr. LAPP.
Fall, Winter, and Spring terms, W., 3:00 to 4:50.
- 8a. Research. Professor WEATHERLY.
Fall, Winter, and Spring terms, at hours to be appointed.

DEPARTMENT OF PHILOSOPHY

ERNEST H. LINDLEY, Professor of Philosophy and Psychology.

WARNER FITE, Professor of Philosophy.

WILLIAM L. BRYAN, Lecturer on Ethics.

MELVIN E. HAGGERTY, Associate Professor of Psychology, and Director of the Psychological Laboratory.

Following are the courses open to Graduates in the Department. The more elementary courses are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue.

34. Psychological Seminary. Professor LINDLEY and Assistant Professor HAGGERTY.
Fall, Winter, and Spring terms, two hours a week.
35. Modern Idealism. Professor FITE.
Fall, Winter, and Spring terms, T. Th., at 10:00.
36. Advanced Logic and Methods of Science. Professor FITE.
Fall and Winter terms, two hours once a week at a period to be arranged.]
Omitted in 1912-13.

5. Advanced Psychology. Professor LINDLEY or Professor FITE.
Fall, Winter, and Spring terms, at hours to be arranged.
7. Comparative Psychology. Assistant Professor HAGGERTY.
Fall and Winter terms, M. W. F., at 11:00.
8. Psychological Research. Work arranged with individual students.
Professor LINDLEY and Assistant Professor HAGGERTY.
Fall, Winter, and Spring terms, at hours to be arranged.
30. Seminary in Applied Psychology. A survey of psychological principles in relation chiefly to business enterprise and industrial processes, and incidentally to various trades and professions.
Professor LINDLEY and Assistant Professor HAGGERTY.
Fall, Winter, and Spring terms, two hours a week.

DEPARTMENT OF MATHEMATICS

SCHUYLER C. DAVISSON, Professor.

DAVID A. ROTHROCK, Professor.

ULYSSES S. HANNA, Associate Professor.

ROBERT D. CARMICHAEL, Associate Professor.

KENNETH P. WILLIAMS, Instructor.

The graduate courses at present offered by the Department lead to the A.M. and Ph.D. degrees.

The library of the Department, consisting of about 2,300 bound volumes, is located in Room 36, Wylye Hall. The library is open from 8:00 a.m. to 10:00 p.m., for use by students pursuing advanced work in Mathematics. The collection of mathematical books consists of the more important English, French, and German texts and treatises, the collected works of Abel, Bernoulli, Cauchy, Cayley, Clifford, DeMorgan, Gauss, Jacobi, Lagrange, Lie, Möbius, Riemann, Schwartz, Smith, Steiner, and Weierstrass, together with the following sets of periodicals:

Acta Mathematica. Stockholm, Berlin, Paris. 1882 to date.

Akademie der Wissenschaften, Sitzungsberichte, Math.—Naturwiss, Klasse. Vienna. Current numbers.

Akademie der Wissenschaften, Math.—Phys. Klasse. Berlin. Current numbers.

Akademie van Wetenschappen, Verhandelingen. Amsterdam. Current numbers.

American Journal of Mathematics. Baltimore. 1878 to date.

American Mathematical Monthly. Springfield, Mo. 1884 to date.

Analyst (The). Des Moines, Ia. 1874-1883. Complete.

Annali di Matematica. Milan. Current numbers.

Annals of Mathematics. Charlottesville, Va., and Cambridge, Mass. 1884 to date.

Annales scientifiques de l'Ecole Normale Supérieure. Paris. 1864 to date.

Archiv der Mathematik und Physik. Leipzig. 1841 to date.

- Archiv für Mathematik og Naturvidenskab. Christiania. Current numbers.
- Arkiv för Matematik, Astronomi och Fysik. Stockholm. 1903 to date.
- Atti della Reale Accademia dei Lincei. Rome. Current numbers.
- Bibliotheca Mathematica. Leipzig. Current numbers.
- Bulletin de la Société mathématique de France. Paris. 1872 to date.
- Bulletin de la Société physico-mathématique de Kasan. Kasan. Current numbers.
- Bulletin des Sciences mathématiques. Paris. 1870 to date.
- Bulletin of the American Mathematical Society. New York. 1894 to date.
- Bulletin of the New York Mathematical Society. New York. 1891-1894. Complete.
- Cambridge Mathematical Journal. Cambridge. 1837-1845. Complete.
- Cambridge and Dublin Mathematical Journal. Cambridge. 1846-1854. Complete.
- Educational Times (Mathematical Reprints from the). London. 1863 to date.
- Giornale di Matematiche di Battaglini. Naples. Current numbers.
- Il Bulletinino di Matematico. Bologna. Current numbers.
- Jahrbuch über die Fortschritte der Mathematik. Berlin. 1868 to date.
- Jahresbericht der deutschen Mathematiker-Vereinigung. Leipzig. 1892 to date.
- Journal de l'Ecole Polytechnique. Paris. 1795 to date.
- Journal de Mathématiques pures et appliquées (Liouville). Paris. 1836 to date.
- Journal für die reine und angewandte Mathematik (Crelle). Berlin. 1826 to date.
- L'Education Mathématique. Paris. Current numbers.
- L'Enseignement Mathématique. Genève. Current numbers.
- L'Intermédiaire des Mathématiciens. Paris. Current numbers.
- Mathematical Monthly (The). Cambridge Mass. 1859-1861. Complete.
- Mathematical Magazine. Washington. 1882-1884.
- Mathematical Gazette. London. 1896 to date.
- Mathematical Messenger (The). Ada, Louisiana. 1887-1894.
- Mathematical Review. Worcester. 1896-1897. Complete.
- Mathematical Visitor. Erie, Pa. 1877-1883. Complete.
- Mathematische Annalen. Leipzig. 1869 to date.
- Mathematische und naturwissenschaftliche Berichte aus Ungarn. Leipzig. Current numbers.
- Mathesis. Ghent. 1881 to date.
- Messenger of Mathematics (The Oxford, Cambridge and Dublin). Cambridge. 1862-1871. Complete.
- Messenger of Mathematics (The). London and Combridge. 1872 to date.
- Mitteilungen der Mathematischen Gesellschaft in Hamburg. Leipzig. Current numbers.
- Monatschafte für Mathematik und Physic. Vienna. Current numbers.
- Municipal Journal of Engineering. New York. 1905 to date.
- Nachrichten von der Königlichen Gesellschaft der Wissenschaften zu Göttingen: Mathematisch-physikalische Klasse. Berlin. 1873 to date.
- Nouvelles Annales de Mathématiques. Paris. Current numbers.
- Nyt Tidsskrift für Matematik. Copenhagen. Current numbers.

- Proceedings of the Edinburgh Mathematical Society. Edinburgh. 1883 to date.
- Proceedings of the Indiana Academy of Science. Indianapolis. 1891 to date.
- Proceedings of the London Mathematical Society. London. 1865 to date.
- Proceedings of the Mathematical-physical Society of Tokyo. Tokyo. Current numbers.
- Quarterly Journal of Mathematics, Pure and Applied. London. 1857 to date.
- Rendiconti del Circolo Matematico di Palermo. 1884 to date.
- Revista de la Sociedad Matemática Española. Madrid. 1911 to date.
- Revue de Mathématiques Spéciales. Paris. Current numbers.
- Revue Semestrielle des Publications mathématiques. Amsterdam. 1893 to date.
- Sächsische Gesellschaft der Wissenschaften. Berichte. Mathematisch-Physikalische Klasse. Leipzig. Current numbers.
- Science. New York and Lancaster. 1908 to date.
- Sitzungsberichte der Berliner mathematischen Gesellschaft. Berlin. Current numbers.
- Transactions of the American Mathematical Society. New York. 1900 to date.
- Unterrichtsblätter für Mathematik und Naturwissenschaften. Berlin. Current numbers.
- Zeitschrift für Mathematik und Physik. Leipzig. Current numbers.
- Zeitschrift für mathematischen und naturwissenschaftlichen Unterricht. Leipzig. Current numbers.

Graduate Courses

Following are the courses open to Graduates in the Department. The more elementary courses are not here listed; for these see the bulletin of the College of Liberal Arts.

- [21. Theory of Functions. Professor DAVISSON.
Throughout the year, two hours a week.]
Omitted in 1914-15.
- [39. Theory of Groups of Substitutions. Associate Professor HANNA.
Throughout the year, two hours a week.]
Omitted in 1914-15.
- 20. Mathematical Reading and Research. Professors DAVISSON and ROTHROCK, Associate Professors HANNA and CARMICHAEL.
Hours and credits to be arranged.
- [20d. Difference Equations. Associate Professor CARMICHAEL.
Throughout the year, two hours a week.]
Omitted in 1914-15.
- [30. Differential Geometry. Professor ROTHROCK.
Throughout the year, three hours a week.]
Omitted in 1914-15.

- [43. Bessel, Laplace, and Lamés, Functions. Associate Professor CARMICHAEL.
Throughout the year, three hours a week.]
Omitted in 1914-15.
- [55. Ordinary Differential Equations. Associate Professor CARMICHAEL.
Throughout the year, three hours a week.]
Omitted in 1914-15.
23. Algebra of Quantics. Associate Professor HANNA.
Throughout the year, three hours per week.
25. Theory of Infinite Series. Associate Professor CARMICHAEL.
Throughout the year, three hours per week.
31. Encyclopedia of Elementary Mathematics. Professor ROTHROCK.
Fall and Winter terms, three hours per week.
44. Non-Euclidean Geometry. Professor DAVISSON.
Summer term, 1914.
- [56. Point Sets and Functions of a Real Variable. DR. WILLIAMS.
Fall and Winter terms, two hours.]
Omitted in 1914-15.
57. Mathematical Analysis. Associate Professor CARMICHAEL.
Throughout the year, three hours per week.
26. Projective Geometry. Professor DAVISSON.
Throughout the year, two hours per week.
34. Higher Algebra. DR. WILLIAMS.
Summer term, 1914.
Fall and Winter terms, three hours per week.
20. Mathematical Reading and Research. Professors DAVISSON and
ROTHROCK, Associate Professors HANNA and CARMICHAEL and
DR. WILLIAMS.
Hours and credit to be arranged.

Courses 26, 31, and 44 may be taken by Graduates and undergraduates.

DEPARTMENT OF MECHANICS AND ASTRONOMY

WILBUR A. COGSHALL, Associate Professor of Astronomy.

Kirkwood Observatory, completed in 1900, is occupied by the Department. The building contains a library and computing room; a lecture room; dark room; a transit room, in which are a Bamberg universal instrument, a Howard sidereal clock, a mean time chronometer, and a chronograph; a dome twenty-six feet in diameter; and a room of the same size immediately below. In the dome is the refracting telescope, of which the 12-inch objective is by Brashear, and the mounting by Warner and Swasey, of Cleveland. The instrument has a focal length of about 15 feet, and is supplied with eyepieces magnifying from 130 to nearly 1,000 diameters; also with polarizing helioscope, diagonal eyepiece, and an electrically illum-

inated micrometer; there are both coarse and fine circles in right ascension and declination, the fine circles having reading microscope and electrical illumination.

The Department has in a separate building, a mounting, designed and built by the Department, that carries a 4-inch Browning refractor, a 5-inch portrait lens and an 8-inch parabolic mirror, for the photography of comets, nebulæ, etc.

For an account of the Lawrence Fellowship in Astronomy, see page 14.

The Department receives telegraphic bulletins of discoveries made at American and European observatories.

Following are the courses open to Graduates in the Department. The more elementary courses are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue.

14. Orbits of Spectroscopic Binaries. Associate Professor COGSHALL.
Winter term, T. Th., at 2:00.
8. Theoretical Mechanics. Mr. DREW.
Fall, Winter, and Spring terms, M. W. F., at 9:00.
15. Celestial Mechanics. An introductory course. Mr. DREW.
Spring term, M. W. F., at 11:00.
Open to students who have passed in Course 7.
12. Theoretical Astronomy. Integration of equations of motion; computation of orbits and ephemerides. Mr. DREW.
Fall term. Hours and credits to be arranged with each student.
13. Astronomical Research. A limited number of students will be permitted to undertake research work under the supervision of the Department. The equipment is best suited for work in astronomy of precision and celestial photography. Associate Professor COGSHALL and Mr. DREW.
Fall, Winter, and Spring terms. Hours and credit arranged with each student.

DEPARTMENT OF PHYSICS

ARTHUR L. FOLEY, Professor.

ROLLA R. RAMSEY, Associate Professor.

The graduate courses offered by the Department lead to the A.M. and Ph.D. degrees.

The supply of apparatus for the presentation of courses in modern experimental physics is fairly complete. The equipment and facilities for work have been largely increased during the past few years, especially in the way of sensitive instruments and advanced standards for advanced study and research.

The library of the Department of Physics contains about eight hundred volumes, exclusive of sets of several journals. The following magazines are on file: 'Annalen der Physik,' 'Annales de Chimie et de Physique,' 'Beiblatter zu den Annalen der Physik,' 'Physikalische Zeitschrift,' 'The Electrical World and Engineer,' 'The Electrician' (London), 'Journal de Physique,' 'The Philosophical Magazine,' 'The Physical Review,' 'The Proceedings of the Physical Society of London,' 'The Proceedings of the Royal Society,' 'LeRadium,' 'Science Abstracts' (A and B), 'School Science and Mathematics,' 'Scientific American,' 'Scientific American Supplement,' and the publications of the Bureau of Standards and numerous academies and societies. Students have access also to the journals on file in the general library and in the libraries of other departments. Of these may be named: 'The American Journal of Science,' 'The Astrophysical Journal,' 'The Engineering and Mining Journal,' 'The Engineering Magazine,' 'Nature,' 'Comptes Rendus,' 'Science,' 'The Journal of Photography,' and 'The Journal of Physical Chemistry.'

The courses comprising the work of the first three years (forty-five hours) in Physics will be found listed in the bulletin of the College of Liberal Arts, or in the University catalogue. The following courses are open to Graduates, and to such undergraduates as may be prepared to take them:

10. Applied Electricity and Dynamo Electric Machinery. Laboratory work. Associate Professor RAMSEY.
Fall and Winter terms, T. Th., at 2:00.
20. Physical Methods and Manipulation of Physical Apparatus. Laboratory Practice. Associate Professor RAMSEY.
Fall term, M. W. F., at 2:00.
38. Electric Waves. Combined text and laboratory course. Assistant Professor DUTCHER.
Winter term, M. W. F., at 2:00.
36. The Electron Theory. Associate Professor RAMSEY.
Spring term, T. Th., at 1:00.
37. Conduction of Electricity through Gases, and Radio-activity. Combined text and laboratory course. Associate Professor RAMSEY.
Spring term, M. W. F., at 2:00.
12. Physical Optics. Associate Professor RAMSEY.
Fall, Winter, and Spring terms, T. Th., at 9:00.
13. Advanced Mathematical Electricity. Associate Professor RAMSEY.
Fall, Winter, and Spring terms, T. Th., at 9:00. (Courses 12 and 13 are given in alternate years.)
22. Current Physical Literature. Professor FOLEY.
Fall, Winter, and Spring terms, T. Th., at 10:00.

16. Laboratory Practice in Spectroscopy and Photometry. Associate Professor RAMSEY.
Fall, Winter, and Spring terms, T. Th., at 2:00.
14. Advanced Laboratory Methods and Research. Professor FOLEY.
Fall, Winter, and Spring terms, daily, 8:00 to 12:00 and 1:00 to 5:00.
30. Advanced Theoretical Physics. A critical study of standard treatises and memoirs. Professor FOLEY.
Fall, Winter, and Spring terms, two hours a week, at a time to be appointed.

DEPARTMENT OF CHEMISTRY

ROBERT E. LYONS, Professor.

*LOUIS S. DAVIS, Professor.

OLIVER W. BROWN, Associate Professor.

FRANK C. MATHERS, Associate Professor.

CLARENCE E. MAY, Associate Professor.

The Department of Chemistry has general, special, and private laboratories, a laboratory room, a lecture room, balance room, an incubator room, a stock room, museum, etc. Special laboratories are provided for electrochemistry, assaying and electric furnace work, organic, inorganic and physiological chemistry, water and gas analysis, spectroscopic analysis. The laboratories comprise eleven large, well-lighted rooms, equipped with workstands, capable of accommodating two hundred and seventy-five students. Each room is provided with fume hoods and air tight registers connected with a ventilating fan for the removal of offensive and poisonous gases.

The general equipment for graduate work, including three research laboratories and library facilities, has been materially increased during the past year.

Special attention is given to inorganic, organic, physiological, and physical chemistry and to electrochemistry, technical analytical chemistry, and electro-metallurgy.

The graduate work of the Department, leading to the degree A.M. and Ph.D., comprises advanced laboratory, lecture, library and seminary work in the lines indicated above, and special graduate courses described below. A thesis embodying original investigation is required for an advanced degree.

The laboratories for advanced work and the departmental library are open from 8:00 a.m. to 5:00 p.m. There are no classes in the laboratories; each student works independently. A five-hour

*Absent on leave January 1 to September 1, 1914.

laboratory course requires two and one-half actual hours of laboratory work daily.

Following are the courses open to Graduates in this Department. The more elementary courses are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue.

19. Physical Chemistry. Laboratory work. Associate Professor BROWN.
22. Electrochemistry. Associate Professor BROWN and Mr. CARLISLE.
Winter term. (A) Lectures, T. Th., at 8:00. (B) Laboratory, M. W. F., 1:00 to 4:50.
23. Electrochemistry. Associate Professor BROWN and Mr. CARLISLE.
Spring term. (A) Lectures, T. Th., at 8:00. (B) Laboratory, M. W. F., 1:00 to 4:50.
29. Storage Batteries. Lectures and laboratory work. Associate Professor BROWN.
Fall term.
13. Elementary Metallurgy and Assaying. Lectures and laboratory work.
Associate Professor BROWN and Mr. CARLISLE.
Fall term. Lectures, T. Th., at 8:00; laboratory work, F. S., 8:00 to 11:50.
15. Advanced Technical and Engineering Analysis. Laboratory work.
Associate Professor MATHERS.
Spring term, daily.
32. Gas and Fuel Analysis. Lectures and laboratory work. Associate Professor MATHERS.
Winter term, three hours a week.
33. Spectrum Analysis and Sugar Analysis. Lectures and laboratory work. Associate Professor MATHERS.
Fall term, two hours a week.
26. Chemical Engineering. Associate Professor BROWN.
Fall term. Lectures, M. W. F., at 8:00.
14. Seminary. Reports on current literature and special topics. (1)
Fall term: Inorganic Chemistry. Associate Professor MATHERS.
(2) Winter term: Organic Chemistry. Professor LYONS and
Associate Professor MAY. (3) Spring term: Electrochemistry
and Industrial Chemistry. Associate Professor BROWN and
Associate Professor MAY.
Fall, Winter, and Spring terms, Th., at 7:00 p.m.
- 12a. Research in Organic or Physiological Chemistry. Professor LYONS
and Associate Professor MAY.
Fall, Winter, and Spring terms, daily, 8:00 to 5:00.
- 142b. Research in the Chemistry of the Alkaloids. Professor DAVIS.
Fall, Winter, and Spring terms, daily, 8:00 to 5:00.]
Omitted in 1914-15.
- 12c. Research in Physical Chemistry and Electrochemistry. Associate
Professor BROWN.
Fall, Winter, and Spring terms, daily, 8:00 to 5:00.
- 12d. Research in Inorganic Chemistry. Associate Professor MATHERS.
Fall, Winter, and Spring terms, daily, 8:00 to 5:00.

- 18c. Advanced Physical Chemistry. Lectures on selected chapters of Physical Chemistry. Associate Professor BROWN.
Spring term, T. Th., at an hour to be appointed.
24. Advanced Electrochemistry and Electro-Metallurgy. (A) Lectures on the design and operation of commercial electric furnaces and on electric furnace processes and products. (B) Advanced laboratory work and research in pure and applied electrochemistry and electro-metallurgy, including investigations in electric furnace work, refining and extraction of metals, electro-synthesis of organic and inorganic compounds, manufacture of storage batteries, and of industrial electrochemical processes. Associate Professor BROWN.
Fall, Winter, and Spring terms. Laboratory work, daily, 8:00 to 4:50; lectures, Winter term, F., at 8:00.
Students in this course are recommended to take Physics 10 and 24.
25. Advanced Organic Chemistry. A continuation of Course 6. (A) Lectures and recitations on selected chapters of organic chemistry. (B) Laboratory work or research in synthetic or analytical organic chemistry. Associate Professor MAY.
(A) Winter and Spring terms, T. Th., 11:00. (B) Fall, Winter, and Spring terms, daily, 8:00 to 4:50.
Cohen, 'Textbook of Organic Chemistry'; Roscoe and Schorlemer, 'Treatise on Chemistry'; Hammersten, 'Physiological Chemistry'; Hensler-Pond, 'Terpenes.'
Presupposes Courses 6¹, 6², 7.
31. Advanced Inorganic Chemistry. Laboratory work. The preparation and study of the properties and reactions of the different compounds of the rare and uncommon elements, followed by research. This includes a review of the literature relating to the element that is being studied. Associate Professor MATHERS.
Fall, Winter, and Spring terms, M. W. F., 8:00 to 4:50.

DEPARTMENT OF GEOLOGY

EDGAR R. CUMINGS, Professor.

JOSHUA W. BEEDE, Associate Professor.

The work offered by the Department, leading to the Ph.D. degree, consists largely of research. Courses 10 and 13 are entirely of this nature. The problems offered for investigation are confined for the most part to stratigraphic geology and paleontology, although several studies in economic and geographic geology have also been published by members of the Department.

In stratigraphic geology the subjects covered by the researches of the Department have been concerned chiefly with the Ordovician and Mississippian rocks of Indiana, and with the Upper Carboniferous and Permian rocks of Kansas, Oklahoma, and Texas. In pure paleontology, the Department is especially equipped for the

study of problems in the development and morphology of Paleozoic Brachiopoda and Bryozoa. Considerable work has already been published in this field.

For the prosecution of researches along the lines indicated above, the Department is adequately equipped. The collections of fossils are especially rich in material from the Ordovician, Silurian, and Mississippian of Indiana, and from the Upper Carboniferous and Permian of Kansas and Texas. The latter collections are among the best in America. A special feature of all these collections is the wealth of screenings containing immature stages of Brachiopoda, Bryozoa, and other fossils.

The laboratory equipment contains the usual apparatus for the preparation of material, and machinery for cutting, grinding, and polishing thin sections of fossils. An enlarging and microphotographic camera with special lighting appliances and combinations of lenses for a wide range of work, is available as an aid in the proper illustration of paleontological material.

The Department receives the principal American and European periodicals dealing with geology, paleontology, and geography.

Following are the courses open to Graduates in the Department. The more elementary courses are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue.

3. Economic Geology. A discussion of the non-metallic materials, such as clays, cement, coal, oil and gas, building stones, etc. Associate Professor BEEDE.
Winter term, daily, at 8:00.
5. Systematic Paleontology. Laboratory study of fossil invertebrates. DR. GALLOWAY.
Fall, Winter, and Spring terms, two to five hours, at times to be arranged.
- 5a. Evolution. A study of the geologic factors in evolution; the origin of the oldest faunas; age of the earth, etc. Professor CUMINGS.
Winter term, at an hour to be arranged.
10. Research. Investigation of geological and paleontological problems. A careful report on each investigation is required, in proper form for publication. Professor CUMINGS and Associate Professor BEEDE.
Fall, Winter, and Spring terms, daily, 9:00 to 4:50.
13. Advanced Field Work. Continuous work in the field for a month or more in the summer, fall, or spring. This course will usually form part of the research work submitted for an advanced degree. The work must be largely independent, but will always be under the general oversight of a member of the department.

- [14. Stratigraphic Geology. A study of the literature of the various geologic systems. The history of their investigation, and the present knowledge of their divisions, distribution, faunas, and paleography will be fully considered. Professor CUMINGS.
 Fall, Winter, and Spring terms. Lectures, T. Th., at 10:00.]
 Omitted in 1914-15.

DEPARTMENT OF BOTANY

DAVID M. MOTTIER, Professor.

FRANK M. ANDREWS, Associate Professor.

JAMES M. VAN HOOK, Assistant Professor.

Graduate work leading to the degree of Master of Arts in Botany comprises special studies along some line indicated in the advanced courses enumerated below, or the investigation of some problem of a more limited scope. For the degree of Doctor of Philosophy, the subject of the thesis is selected from some line of morphology, cytology, physiology, or mycology. Space is provided for four students, and for the work undertaken the equipment is adequate.

The departmental library contains the more necessary works of reference, and the principal botanical journals.

Following are the courses open to Graduates in the Department. The more elementary courses are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue.

4. Morphology of Fungi. Assistant Professor VAN HOOK.
 Fall, Winter, and Spring terms, daily, 1:00 to 3:00.
5. Physiology. Associate Professor ANDREWS.
 Fall, Winter, and Spring terms, daily.
6. Cytology. Professor MOTTIER.
 Fall, Winter, and Spring terms, daily.
- 5a. Research in Physiology. Special studies will be offered to those pursuing work for advanced degrees. Associate Professor ANDREWS.
 Fall, Winter, and Spring terms, daily.
7. Research in Morphology and Cytology. Problems for special investigation in morphology and cytology will be assigned to students who are prepared to undertake original work. Professor MOTTIER.
 Fall, Winter, and Spring terms, daily.
13. Morphology of the Algae. A study of the life-history and of the development of vegetative and reproductive organs in certain algae. The work is confined very largely to fresh-water forms. Professor MOTTIER.
 Fall, Winter, and Spring terms, daily.
18. Investigations in Mycology and Plant Pathology. Assistant Professor VAN HOOK.
 Fall, Winter, and Spring terms, daily, 1:00 to 3:00.

DEPARTMENT OF ZOOLOGY

CARL H. EIGENMANN, Professor, and Director of the Biological Station.
FERNANDUS PAYNE, Associate Professor.
WILL SCOTT, Assistant Professor.

Full work leading to the degree Ph.D. is offered in Course 6. It is purely a research course, and offers the widest choice of subjects permitted by the equipment of the Department.

The subjects selected have radiated from centers. One of several of these is the problem, or problems, of the freshwater fauna of tropical America. At present the Department is engaged in a study of divergent evolution as shown by the tropical American characin fishes, and in the distribution of the fishes of Western Colombia and Ecuador.

The Department is well equipped for this work. The most important of the zoological collections is the collection of fishes, comprising many thousand specimens. Arrangements have been made for co-operation with various other institutions, by which the largest aggregation in the world of collections of South America freshwater fishes is available for the monographs in preparation. By special arrangement the collections of Harvard University, made by Professor L. Agassiz and his assistants during the Thayer expedition, and by others, are available for the monograph on the American Characins.

The Department has entered into close relations with the Carnegie Museum of Pittsburg. Under the direction of Dr. W. J. Holland, director of this Museum, Mr. John Haseman, A.M., '07, during 1907-1910, explored the coast rivers of Brazil, Uruguay, and Argentina, between the Rio San Francisco and Buenos Aires. He ascended the Rio Paraguay, crossed to the Guaporé and descended that river and the Rio Madeira to Manaos, on the Amazon, making collections on the way.

From August to December, 1908, Professor Eigenmann, with Mr. S. E. Shideler as volunteer assistant, explored the Demerara, Essequibo, and Potaro Rivers of British Guiana. Very extensive collections were made in the lowland, as well as above the Kaieteur, a vertical fall of 741 feet of the Potaro River. The results of the expedition have been published by the Carnegie Museum as reports of the British Guiana Expedition of Indiana University and the Carnegie Museum. The final report on 'The Freshwater Fishes of British Guiana' was issued in August, 1912.

From January to April, 1912, Professor Eigenmann made collections in the San Juan, Atrato, Dagua, Cauca, and Magdalena Rivers in Colombia.

During January to April of 1913 Mr. Charles Wilson and Mr. Arthur Henn explored the Patia River of Southwestern Colombia and supplemented the work done the preceding year in the San Juan and Atrato Basins of Colombia. Their work was made possible by the generosity of Mr. Hugh McK. Landon and Mr. Carl G. Fisher of Indianapolis. Mr. Landon has generously provided the means to enable Mr. Henn to extend the work into Ecuador. He was in the field till March, 1914.

The second center of departmental interest has been, and is the subject of heredity, especially: (A) The history of the Sex Cells, (B) Variation, (C) The rate of ontogenetic and phylogenetic modification of the sense organs of Cave Animals, (D) Experimental Zoölogy.

For the study of cave animals (C) the facilities of the Department are ideal. The University is located at the edge of the great cave region of the Mississippi valley. By act of the Legislature, the Donaldson estate near Mitchell, *Indiana, has been placed in the keeping of the trustees of Indiana University. On it are situated numerous sinkholes, dry caves, and an underground water-course at least two miles long. This underground river is rich in blind fishes and other blind aquatic animals. A small laboratory has been erected on the farm, and is in charge of a research fellow, appointed from year to year. In the study of cave animals the Department has in the past had the co-operation of the Carnegie Institution, the American Association for the Advancement of Science, and the Elizabeth Thompson Science Fund.

For the study of variation (B) in non-migratory vertebrates in a 'unit of environment' this Department organized and has since maintained a fresh-water Biological Station. It is at present located on Winona Lake, Kosciusko County, Indiana, in the grounds of the Winona Assembly. The Station owns, as a gift of the Winona Assembly, two buildings, 20 x 45 feet, each two stories high. The buildings are on the lake front, at the mouth of Cherry Creek. The Station also owns boats, nets, sounding and temperature apparatus, glassware, etc. Microscopes and other needed apparatus are moved to the Station from the University.

For the study of sex cells (A), and Experimental Zoölogy (D),

*By a recent decision of the Supreme Court, the act placing the management of this land in the hands of the trustees of Indiana University has been decided to be unconstitutional.

the Department owns all the necessary apparatus and the surroundings of the University offer an abundance of material. The Department also owns collections gathered in the vicinities of Jackson, Miss., Salt Lake City, Los Angeles, Tucson, El Paso, and San Antonio, by Professor Payne.

A third line of work undertaken by the Department is the survey of Indiana Lakes. Hydrographic maps of the lakes are being made, the physical and chemical conditions determined, and the various biological phenomena analyzed.

The field work for these investigations is done in the summer, the Biological Station on Winona Lake being used as a base. The solution ponds in the region of the University are being utilized for comparative studies.

Following are the courses open to Graduates in the Department. The more elementary courses are not here listed; for these see the bulletin of the College of Liberal Arts or under that heading in the University catalogue.

3. Advanced Zoölogy. Professor EIGENMANN and Assistant Professors PAYNE and SCOTT.
Fall, Winter, and Spring terms, five hours a week.
4. General Biological Problems: (A) The development of the idea of evolution and Darwinism; (B) The laws of heredity. Professor EIGENMANN.
Spring term, daily, at 9:00.
5. Seminary. Weekly meetings of advanced students and instructors to discuss current literature and report on investigations in progress. Professor EIGENMANN and Associate Professor PAYNE.
Fall, Winter, and Spring terms, M., at 4:00.
6. Research. Special investigation of zoölogical problems, with a report on each investigation. Branches in which subjects have in the past been selected and reported upon are Variation, Degeneration, Regeneration, Sense Organs, Embryology, Faunal and Systematic Studies of Fishes, Ecology of Cave and Freshwater Animals, Cell and Chromosome Studies. For a fuller statement, see the general statement of the Department. Professor EIGENMANN, Associate Professor PAYNE, and Assistant Professor SCOTT.
Fall, Winter, and Spring terms, 8:00 to 4:50.
7. Biological Survey. A continuation of the previous work in the physical and biological features of Winona Lake and its environs. Professor EIGENMANN, Assistant Professor SCOTT.
Summer term, at the Biological Station.

DEPARTMENT OF ANATOMY

BURTON D. MYERS, Professor.

Following are the courses open to Graduates in the Department. The more elementary courses are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue.

13. Research Work. Opportunity for research work is offered to advanced students who may have at least one-half their time for one year free for the work. Professor MYERS.

Fall, Winter, and Spring terms, at hours to be appointed.

15. Advanced Course in Anatomy. Open to students who have completed the dissection of the human body, Course 8, and desire to do special or advanced work. Professor MYERS.

Fall, Winter, and Spring terms, at hours to be appointed.

PHYSIOLOGY

WILLIAM J. MOENKHAUS, Professor.

CLARENCE E. EDMONSON, Instructor.

EDWARD W. KOCH, Instructor.

Facilities for research leading to the higher degrees are available within restricted lines in general physiology.

Following are the courses open to Graduates in the Department. The more elementary courses are not here listed; for these see the bulletin of the College of Liberal Arts, or under that heading in the University catalogue.

6. Advanced Physiology. Professor MOENKHAUS and Mr. EDMONSON.
Fall, Winter, and Spring terms, at hours to be arranged.
10. Research. Problem work in certain phases of general physiology may be taken by those properly equipped. Professor MOENKHAUS.
Fall, Winter, and Spring terms, daily, 8:00 to 4:50.
11. Seminary.

EDUCATION

WILLIAM W. BLACK, Professor and Dean.

ELMER E. JONES, Professor.

*W. F. BOOK, Professor.

HUBERT G. CHILDS, Associate Professor.

MELVIN E. HAGGERTY, Associate Professor.

Graduate work is offered in the School of Education, and special programs leading to the A.M. and Ph.D. degrees, with the Master's

*Absent on leave.

and Doctor's certificates of Education, will be arranged on application.

A student whose undergraduate major was in another department will usually be given opportunity to do in one year the work for the A.M. degree in Education. The work will include such undergraduate courses in Education as may be necessary as a basis for graduate work.

In the future, as in the past, the best work of students in the courses in research work will be published.

Following are the courses open to Graduates in the School. The more elementary courses are not here listed; for these or for fuller statements of the courses below, see the bulletin of the School of Education, or under that heading in the University catalogue.

6. History of Education. Professor JONES.
Fall, Winter, and Spring terms, T. Th., at 8:00.
10. Philosophy of Education. Professor JONES.
Fall, Winter, and Spring terms, M. W. F., at 8:00.
15. School Administration. Associate Professor CHILDS.
Fall, Winter, and Spring terms, M. W. F., at 10:00.
- 16a. Educational Seminary. Professor JONES.
Fall, Winter, and Spring terms, T., at 7:00 p.m.
- 16b. Educational Seminary. Elementary Education. Professor BLACK.
Fall, Winter, and Spring terms, M., at 7:00 p.m.
17. Advanced Educational Psychology. Associate Professor HAGGERTY.
Fall, Winter, and Spring terms, M. W. F., at 10:00.
9. Orthogenics. Professor JONES.
Fall, Winter, and Spring terms, T. Th., at 3:30.
11. Principles of Organization and Supervision. Professor BLACK.
Fall, Winter, and Spring terms, T. Th., at 10:00.
18. Research in Education.
 - a. The Problems of the Elementary School. Professor BLACK.
 - b. The History and Philosophy of Education. Professor JONES.
 - c. The Psychology of the Processes of Education. Associate Professor HAGGERTY.
 - d. Secondary Education. Associate Professor CHILDS.
 - e. School Administration. Associate Professor CHILDS.

Students Registered in the Graduate School, 1913-1914

S, Summer term. F, Fall term. W, Winter term. Sp, Spring term.

Abell, Jasper August.....	Middletown, Ind.
A. B., Indiana University, 1910	Education.....S.
Allen, William Ray.....	Hartford City, Ind.
A. B., 1913, Indiana University.	Zoölogy.....S. F.
Andrews, Mrs. Marie Opperman.....	Bloomington, Ind.
A. B., 1902, Indiana University;	Botany.....S. F. W.
A. M., 1903, Wellesley.	
Artman, Oliver Clarencee.....	Noblesville, Ind.
A. B., 1912, Indiana University.	Sociology.....S. F. W. Sp.
Atkinson, Mrs. Zella Wiseman.....	Salem, Ind.
A. B., 1909, Indiana University;	English.....S.
A.M., 1912.	
Baker, Charles Wilford.....	Marion, Ind.
A. B., 1912, Wabash College.	German.....S.
Baldwin, Milton Howard.....	Marion, Ind.
A. B., 1913, Indiana University.	English.....F. W. Sp.
Banta, Elizabeth.....	Bloomington, Ind.
A. B., 1913, Indiana University.	History.....F. W. Sp.
Barr, Hugh Harlan.....	Edwardsport, Ind.
A. B., 1908, Indiana University.	Education.....S.
Bays, John Andrew.....	Rockport, Ind.
A. B., 1908, Wabash College.	Education.....S.
Benckart, Margie Nold.....	Bloomington, Ind.
A. B., 1913, Indiana University.	English.....F. W. Sp.
Bornwasser, Lulu Kirkpatrick.....	Charleston, Ind.
A. B., 1905, Indiana University.	Mathematics....S.
Bourn, Frederick Edward.....	Little Point, Ind.
A. B., 1911, Indiana University.	Education.....S.
Brownfield, Lilian Beeson.....	South Bend, Ind.
A. B., 1895, De Pauw University;	English.....S. F. W. Sp.
A. M., 1904, Ohio Wesleyan.	
Bruner, Jacob Franklin.....	Lexington, Ky.
B. S., Kentucky State University.	.....S.
Brunger, Emma.....	Sullivan, Ind.
A. B., 1911, Indiana University.	Latin.....F.
Buley, Roscoe Carlyle.....	Vincennes, Ind.
A. B., Indiana University, 1914.	History.....Sp.
Burke, Robert E.....	Winsted, Conn.
A. B., 1913, Indiana University.	Fine Arts.....F. W. Sp.
Busenberg, Franklin Leslie.....	Akron, Ind.
A. B., 1913, Indiana University.	Education.....S.

Bybee, Halbert Pleasant.....	Rochester, Ind.
B. S., Rochester Normal School;	Geology.....S. F. W.
A. B., 1912; A. M., 1913, Indiana	University.
Carlisle, Paul Johnson.....	Shelbyville, Ind.
A. B., 1913, Indiana University.	Chemistry.....F. W. Sp.
Carter, Susan Davies.....	Indianapolis, Ind.
A. B., 1911, De Pauw University.	English.....S.
Carter, William Windom.....	Plainville, Ind.
A. B., 1906, Indiana University.	Education.....S.
Cauble, Christopher Columbus.....	Salem, Ind.
A. B., 1910, Indiana University.	Education.....S.
Cockrum, Barrett William.....	Bloomington, Ind.
A. B., 1914, Indiana University.	Chemistry.....W. Sp.
Cox, James Emery.....	Oakland City, Ind.
A. B., 1911, Oakland City College;	English.....F. W. Sp.
A. M., 1913, Indiana University.	
Crampton, Charles.....	Muncie, Ind.
A. B., 1914, Indiana University.	Philosophy.....W. Sp.
Cravens, John William.....	Bloomington, Ind.
A. B., 1897, Indiana University.	Education.....W. Sp.
Crennan, Charles Holloway.....	Bloomington, Ind.
A. B., 1913, Indiana University.	History.....F. W. Sp.
Culp, Vernon Stanford.....	Nappanee, Ind.
A. B., Goshen College.	German.....F. W. Sp.
Cumins, Roy.....	Ingalls, Ind.
A. B., 1909; A. M., 1910, Wabash College.	Mathematics.....S. F. W. Sp.
Davis, Elizabeth Louise.....	Jeffersonville, Ind.
A. B., 1910, Indiana University.	Latin.....S. Sp.
Dame, Mary Ruth.....	Connersville, Ind.
A. B., 1912, Franklin College.	English.....S.
Deam, Thomas Marion.....	Bluffton, Ind.
A. B., 1908, Indiana University.	Education.....F.
Demarce, Elizabeth Lucile.....	Bloomington, Ind.
A. B., 1906, Indiana University.	English.....S.
Du Bois, Henry Mathusalem.....	Wagoner, Ind.
A. B., 1913, Indiana University.	Geology.....F. W. Sp.
Dutcher, John Benjamin.....	Decatur, Ind.
A. B., 1906, Indiana University;	Physics.....F.
A. M., 1907, Indiana University.	
Easley, Katherine.....	New Albany, Ind.
A. B., 1912, Indiana University;	English .....W. Sp.
A. M., 1913, Indiana University.	
Edmondson, Mrs. Edna Hatfield.....	Bloomington, Ind.
A. B., 1911, Indiana University.	Economics.....F. W. Sp.
Edwards, Elmer Horace.....	Jasonville, Ind.
A. B., 1911, Indiana University.	Education.....S. Sp.
Erbes, Clara.....	Centralia, Ill.
A. B., University of Illinois, 1909.	German.....Sp.
Evans, Mrs. Agnes Tobin.....	Bloomington, Ind.
A. B., 1903, Indiana University.	English.....W.

Evans, Beatrice Clementine.....	Bloomington, Ind.	
A. B., 1910, Indiana University;		W. Sp.
A. M., 1911, Indiana University.		
Fall, Crystal Brenton.....	Indianapolis, Ind.	
A. B., 1914, Indiana University.	Chemistry.....	Sp.
Fewell, Charles T.....	Bloomington, Ind.	
A. B., 1914, Indiana University.	Education.....	Sp.
Fisher, John.....	Goshen, Ind.	
A. B., Goshen College, 1913.	Philosophy.....	F. W. Sp.
Foote, Helen Christine.....	Vincennes, Ind.	
A. B., 1912, Indiana University.	English.....	S.
Gilmer, Harold Wright.....	Bloomington, Ind.	
A. B., Monmouth College, 1904.	Greek.....	Sp.
Gregory, Chester Arthur.....	Jonesboro, Ind.	
A. B., 1908, Indiana University.	Education.....	S.
Gregory, Mabel Hanna.....	Bloomington, Ind.	
A. B., 1912, Indiana University.		
Hall, Jessie Geneva.....	Gaston, Ind.	
A. B., 1912, Indiana University.	English.....	S.
Hanna, Thomas H., Jr.....	Bloomington, Ind.	
A. B., Monmouth College, 1893.	Economics.....	F. W. Sp.
Hansford, Hazel Irene.....	Bloomington, Ind.	
A. B., 1913, Indiana University.	English.....	W.
Hawkins, Aubrey Leslie.....	Kokomo, Ind.	
A. B., 1909, Indiana University;	English.....	S.
A. M., 1911, Indiana University.		
Hennel, Edith Amelia.....	Evansville, Ind.	
A. B., 1911, Indiana University.	Botany.....	F. W. Sp.
A. M., 1912, Indiana University:		
Henry, Edna Gertrude.....	Indianapolis, Ind.	
A. B., 1897, Indiana University.	Economics.....	W.
Hinkins, Virginia.....	Chicago, Ill.	
Ph. B., 1913, University of Chicago.		F.
Hisey, Walter Edwin.....	Corydon, Ind.	
A. B., 1912, Indiana University.		S.
Hitchcock, Wiley.....	Elnora, Ind.	
A. B., 1909, Indiana State Normal.		S.
Hoch, August Hermes.....	Rockport, Ind.	
A. B., 1911, Indiana University.	History.....	S.
Hoffer, George Nissley.....	W. Lafayette, Ind.	
A. B., 1909, Lebanon Valley College;		S.
M. S., 1911, Purdue University.		
Hogan, Mary Alice.....	Kewanna, Ind.	
A. B., 1909, Indiana University.	Latin.....	S.
Hogate, Jessie May.....	Bloomington, Ind.	
A. B., 1899, Allegheny College.	History.....	S.
Holiman, Willis Newton.....	Delaware, Ind.	
A. B., 1913, Indiana University.	Education.....	S.
Hoover, Lewis R.....	Bloomington, Ind.	
A. B., 1913, Indiana University.	Education.....	F. W. Sp.

Horner, Mary.....	Bloomington, Ind.
A. B., 1905, Indiana University;	S.
A. M., 1908, Indiana University.	
Hornung, Howard Vincent.....	Bloomington, Ind.
A. B., Indiana University, 1914.	Political Science. Sp.
Houseman, Harley Vernon.....	Hartford City, Ind.
A. B., 1912, Indiana University.	Chemistry....S. F. W. Sp.
Hufford, Mason Edward.....	Rossville, Ind.
A. B., 1911, Indiana University;	Physics.....F. W. Sp.
A. M., 1912, Indiana University.	
Hyslop, George Hall.....	New York City.
A. B., 1913, Indiana University.	Philosophy.....F. W. Sp.
Jackson, Thomas Franklin.....	Calvertville, Ind.
A. B., 1913, Indiana University.	Geology.....S. F. W.
Jones, Altha Belle.....	Bloomington, Ind.
A. B., 1913, Indiana University.	English.....F.
Kamman, William Frederick.....	Dale, Ind.
A. B., 1913, Indiana University.	German.....S. F. W.
Kineaid, Martha May.....	Indianapolis, Ind.
A. B., Butler College, 1913.	French.....Sp.
Knight, Jesse Dudley.....	Bedford, Ind.
A. B., 1908, Indiana University.	Education.....S.
Kunschik, Paul.....	Bloomington, Ind.
A. B., Indiana University, 1914.	German.....Sp.
Lansing, Alice Vance.....	Richmond, Ind.
A. B., Indiana University, 1911.	English.....Sp.
Latzke, Frances Renshaw.....	New York City.
A.B., 1912, Barnard College, Columbia University.	Romance Lang...F. W. Sp..
Lewis, Fred Daniel.....	Bloomington, Ind.
A. B., 1913, Indiana University.	Education.....S. F. W. Sp.
McCain, Gertrude Iona.....	Delphi, Ind.
A. B., 1909, Indiana University;	Mathematics.....W. Sp.
A. M., 1911, Indiana University.	
McCartney, Fred Morton.....	Bloomington, Ind.
A. B., 1912, Indiana University;	Philosophy.....W. Sp.
A. M., 1913, Indiana University.	
McClintock, Lyman Johnston.....	Anderson, Ind.
A. B., 1909, Indiana University.	Latin.....S.
McCloskey, Mary Magdalene.....	Bloomington, Ind.
A. B., 1912, Indiana University;	English.....F. W. Sp.
A. M., 1913, Indiana University.	
McElhinney, Robert Stewart.....	Bloomington, Ind.
A. B., 1912, Indiana University.	English.....S.
McEwan, Mrs. Eula Davis.....	Earl Park, Ind.
A. B., 1913, Indiana University.	Geology.....F. W. Sp.
McKinney, Asa.....	Kempton, Ind.
A. B., Indiana University, 1914.	Chemistry.....Sp.
Mance, Grover Cleveland.....	Pine Bush, N. Y.
B. S., 1906, Colgate University.	Geology.....S. F. W. Sp.

Martz, India Lavina.....	Kokomo, Ind.
A. B., 1900, Butler College.	German.....S.
Mason, Thomas Edward.....	Bloomington, Ind.
A. B., 1905, Indiana University;	Mathematics....F. W. Sp.
A. M., 1912, Indiana University.	
Maxwell, Ruth Redfern.....	Indianapolis, Ind.
A. B., 1907, Indiana University.	Romance Lang...F. W.
Meyer, Lee Albert.....	Shelbyville, Ind.
A. B., 1913, Indiana University.	English.....S.
Miller, Ruth Esther.....	Bloomington, Ind.
A. B., 1911, Indiana University.	English.....F.
Mills, Clifford.....	Franklin, Ind.
B. S., 1910, Franklin College.	Mathematics....F. W.
Montgomery, Emery Watkins.....	Mount Vernon, Ind.
A. B., 1909, Indiana University.	History.....S.
Mortland, Maizie.....	Montezuma, Iowa.
A. B., 1908, Iowa University.	English.....F.
Mourer, Harry Hartley.....	Idaville, Ind.
A. B., 1913, Indiana University.	History.....W.
Murphy, Maurice Elzin.....	Trinity Springs, Ind.
A. B., 1913, Indiana University.	History.....S.
Myers, Fred I.....	Decatur, Ind.
A. B., Indiana University, 1914.	English.....Sp.
Nay, Bavis Clay.....	Mt. Summit, Ind.
A. B., 1910, Indiana University.	Education.....S.
Nicol, Golda May.....	Logansport, Ind.
A. B., 1913, Indiana University.	Latin.....F. W.
Osborn, Otho Charles.....	Linton, Ind.
A. B., 1911, Indiana University.	Education.....S.
Painter, Ruth Elaine.....	Bloomington, Ind.
A. B., 1913, Roanoke College.	English.....F. W. Sp.
Palmer, Willa Norene.....	Ligonier, Ind.
A. B., 1912, Indiana University;	.....F. W. Sp.
A. M., 1913, Indiana University.	
Pfleuger, Luther Appel.....	Ringtown, Pa.
A. B., 1906, Muhlenberg College;	German.....S. F. W. Sp.
A. M., 1913, Indiana University.	
Philputt, Grace Maxwell.....	Indianapolis, Ind.
A. B., 1908, Indiana University.	Romance Lang...S.
Pickard, Mrs. Lulu Estelle.....	Bloomington, Ind.
A. B., 1910, Indiana University.	Latin.....F. W. Sp.
Pickett, Fermen Layton.....	Bloomington, Ind.
A. B., 1910, Indiana University;	Botany.....F. W. Sp.
A. M., 1913, Indiana University.	
Quinn, Mrs. Ally Compton.....	Carroll, Ind.
A. B., 1905, Wilmington College.	Latin.....F. W. Sp.
Ramsey, Glen Blaine.....	Jolietville, Ind.
A. B., 1913, Indiana University.	Botany.....F. W. Sp.
Ranck, Ethel Rose.....	Bloomington, Ind.
A. B., 1911, Indiana University.	German.....F. W. Sp.

Ranek, George Guytner.....	Bloomington, Ind.
A. B., 1913, Indiana University.	History.....S. F. W. Sp.
Ranek, Ralph Alonzo.....	Bloomington, Ind.
A. B., 1912, Indiana University;	History.....S. F. W. Sp.
LL. B., 1912, Indiana University.	
Randle, Foster Stookey.....	Springfield, Ill.
A. B., 1911, De Pauw University.	.....S.
Records, Ralph Lafayette.....	Edinburg, Ind.
Ph. B., 1908, Franklin College;	Geology.....S.
A. M., 1910, Transylvania University.	
Renwick, Elizabeth.....	Monticello, Ind.
A.B., 1914, Indiana University.	English.....Sp.
Richards, Ernest Davis.....	Ingalls, Ind.
A. B., 1908, Indiana University.	Education.....S.
Riggs, Fred.....	Princeton, Ind.
A. B., Indiana University, 1914.	Economics.....Sp.
Risley, Lee Harrison.....	Velpen, Ind.
A. B., 1912, Indiana University.	Chemistry.....S.
Rizer, Eldridge Benton.....	Wolcott, Ind.
A. B., 1912, Indiana University.	Education.....S.
Robinson, James Jaquess	Princeton, Ind.
A.B., 1914, Indiana University.	History .....Sp.
Rubey, Nell.....	Union City, Ind.
B. S., 1910, Ohio Wesleyan University.	.....W. Sp.
Schlotzhauer, Alma Elizabeth.....	Indianapolis, Ind.
A. B., 1912, Indiana University.	English.....S. F. W. Sp.
Shannon, James Vinton.....	Atlanta, Ind.
A. B., 1912, Indiana University.	Mathematics....S.
Shekell, Oliver Morton.....	Oriole, Ind.
A. B., 1913, Indiana University.	.....S.
Shemwell, Oscar T.....	Benton, Ky.
A. B., 1913, Indiana University.	Mathematics....S.
Sherwood, Henry Noble.....	Bloomington, Ind.
A. B., 1909, Indiana University;	History.....F. W. Sp.
A. M., 1910, Indiana University.	
Shewman, William Denman.....	Akron, Ind.
A. B., 1913, Indiana University.	Physics.....S. F. W. Sp.
Slaughter, Minnie May.....	Rome, Ind.
A. B., Indiana University, 1913.	Chemistry.....Sp.
Smith, Mrs. Bessie Lee.....	Charlestown, Ind.
A. B., 1913, Indiana University.	Education.....S. F. W.
Smith, Howard Clifton.....	Sheldon, Ind.
A. B., 1913, Indiana University.	Latin.....F. W. Sp.
Smith, John Earl.....	Lawrenceburg, Ind.
A. B., 1912, Indiana University.	Physics.....S.
Smith, Ronald Ross.....	Charlestown, Ind.
A. B., 1912, Indiana University.	Education.....S. F. W.
Stauffer, Samuel Rolland.....	New Haven, Ind.
A. B., 1913, Indiana University.	English.....S.

Steimley, Leonard Leo.....	Attica, Ind.
A. B., 1912, Indiana University;	Mathematics....F. W. Sp.
A.M., 1913, Indiana University.	
Stempel, Mrs. Myrtle Emmert.....	Bloomington, Ind.
A. B., 1902, Indiana University.	Philology.....F. W. Sp.
Stephenson, Nettie.....	Bedford, Ind.
A. B., 1911, Indiana University.	English.....S.
Stewart, Clifton Oleott.....	Muncie, Ind.
A. B., 1911, Indiana University.	Chemistry.....S.
Stratton, William Timothy.....	Redkey, Ind.
A. B., 1906, Indiana University.	Mathematics....S.
Stuart, Elmer Henry.....	Frankfort, Ind.
A. B., Indiana University, 1914.	Chemistry.....Sp.
Stull, James Grant.....	Bloomington, Ind.
LL. B., 1901, Indiana University.	Education.....S.
Stump, Albert.....	Cromwell, Ind.
A. B., 1912, Indiana University.	English.....F. W. Sp.
Tanke, Clayton Ellsworth.....	Pendleton, Ind.
A. B., 1912, Indiana University.	Chemistry.....S.
Telfer, William Adams.....	Bloomington, Ind.
A. B., 1910, Indiana University.	English.....S.
Thomas, John Hardin.....	Rockport, Ind.
A. B., 1907, Indiana University.	Education.....F. W. Sp.
Thompson, Donna Faye.....	Indianapolis, Ind.
A. B., 1913, Indiana University.	Economics.....F. W.
Toelle, Howard.....	Bloomington, Ind.
A. B., 1913, Indiana University.	History.....F. W. Sp.
Trapp, William Oscar.....	Hoboken, N. J.
A. B., 1912, Indiana University.	Philosophy.....F. W. Sp.
Trovillion, Mac Connie.....	Bloomington, Ind.
A. B., 1912, Indiana University.	Education.....F. W. Sp.
Tucker, Forrest Glenn.....	Georgetown, Ind.
A. B., Indiana University, 1914.	Physics.....Sp.
Twining, Simon Ercile.....*	Bowling Green, O.
Ph. B., 1913, Notre Dame University.	Economics.....F. W. Sp.
Ulrey, Sharon S.....	North Manchester, Ind.
A. B., 1912, Indiana University.	History.....S.
Van Auken, Clarice.....	Clinton, Iowa.
A. B., 1909, University of Wisconsin.	German.....W.
Vogel, William Frederick.....	Boonville, Ind.
A. B., 1912, Indiana University.	Education.....S.
Walker, Heber Pervis.....	Oakland City, Ind.
A. B., 1913, Indiana University.	History.....F. W.
Weaver, William B.....	
A. B., Goshen College, 1914.	History.....Sp.
Wedecking, Albert Jesse.....	Dale, Ind.
A. B., 1913, Indiana University.	German.....S.
White, Cecile Woodard.....	Anderson, Ind.
A. B., 1913, Indiana University.	Philosophy.....F.

Whitmarsh, Hardin.....	Hardingrove, Ind.
A. B., 1912, Indiana University.	Education.....S. F. W. Sp.
Wilson, Charles Earl.....	Brazil, Ind.
A. B., Indiana University.	Zoölogy.....Sp.
Wissler, William Arthur.....	Cambridge City, Ind.
A. B., 1913, Indiana University.	Chemistry.....F. W. Sp.
Woerner, Myrtle Freeda.....	Indianapolis, Ind.
A. B., 1908, Indiana University.	Latin.....S.
Wolfe, Harold Eichholtz	North Manchester, Ind.
A. B., 1913, Indiana University.	Mathematics....F. W. Sp.
Wood, Harry Warren.....	Indianapolis, Ind.
A. B., 1909, Indiana University.	Geology.....S.
Woody, Clifford.....	Thorntown, Ind.
A. B., 1908, Indiana University;	Education.....S. F. W. Sp.
A. M., 1913, Indiana University.	
Woolery, Ruth.....	Bloomington, Ind.
A. B., 1912, Indiana University.	Botany.....S. F. W. Sp.
Wylie, Mrs. Irene Burtt.....	Bloomington, Ind.
A. B., 1906, Indiana University;	.....F. W.
A. M., 1908, Indiana University.	
Yager, Sylvia Clark.....	Bloomington, Ind.
A. B., 1912, Indiana University.	History.....S.
Yates, Ola Wilson.....	Vincennes, Ind.
A. B., 1909, Vincennes University.	English.....F. W.
Yenne, Madge Janet.....	Washington, Ind.
A. B., 1912, Indiana University.	Latin.....S.

SUMMARY.

Total enrollment of the Summer term	82
Enrolled for the Summer term only.....	60
Total enrollment of the Fall term	74
Enrolled for the Fall term only.....	8
Total enrollment of the Winter term.....	79
Enrollment for the Winter term only.....	5
Total enrollment of the Spring term.....	67
Enrolled for the Spring term only.....	4
Enrolled for the Winter and Spring terms only	7
Enrolled for the Summer and Fall terms only.....	1
Enrolled for the Fall and Winter terms only.....	7
Enrolled for the Summer, Fall, Winter and Spring terms..	14
Enrolled for the Fall, Winter and Spring terms.....	41

In 2u2g
1916/17

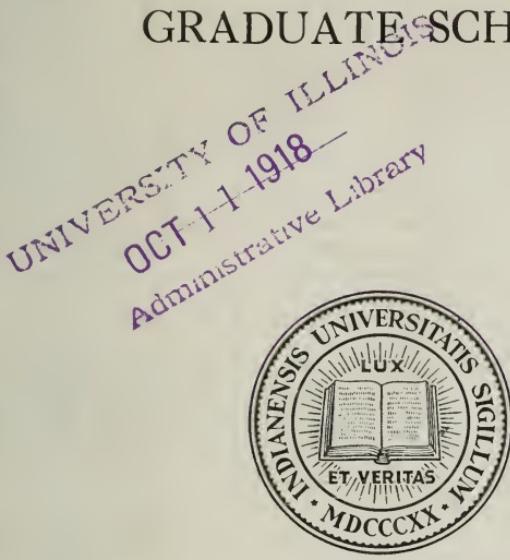
Vol. XIV {
No. 3 }

INDIANA UNIVERSITY BULLETIN
(OFFICIAL SERIES)

{ March
1916

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INDIANA UNIVERSITY GRADUATE SCHOOL



UNIVERSITY OF ILLINOIS LIBRARY

JAN 25 1921

Announcements, 1916-17

1916

APRIL							MAY							JUNE						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
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JULY							AUGUST							SEPTEMBER						
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OCTOBER							NOVEMBER							DECEMBER						
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1917

JANUARY							FEBRUARY							MARCH						
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APRIL							MAY							JUNE						
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15	16	17	18	19	20	21	13	14	15	16	17	18	19	10	11	12	13	14	15	16
22	23	24	25	26	27	28	20	21	22	23	24	25	26	17	18	19	20	21	22	23
29	30	27	28	29	30	31	24	25	26	27	28	29	30

Session days of First and Second semesters in bold faced figures. Days of Summer session 1916 (except *special* schedules of the School of Education and of the School of Law), are in italic.

University Calendar

SUMMER SESSION, 1916

June 15, Thursday.	Registration and enrollment in classes.
June 16, Friday.	Recitations and lectures begin.
August 11, Friday.	Summer session ends.

***SPECIAL SCHEDULES OF THE SCHOOL OF EDUCATION.—Courses for Class A and Class B teachers begin Monday, June 12, and end Friday, August 25. Research courses run from the opening of the Summer session until August 25.

SCHOOL OF LAW.—Courses begin June 12 and end August 25. After July 24, instruction is given six days a week.

BIOLOGICAL STATION (at Winona Lake, Ind.). Opens Saturday, June 17, and closes Friday, August 18. First half closes July 21, and second half begins July 15.

REGULAR SESSION, 1916-17

FIRST SEMESTER

Sept. 18 and 19, Monday and Tuesday.	Matriculation and registration.
September 19, Tuesday.	Enrollment in classes.
September 20, Wednesday.	Recitations and lectures begin.
Nov. 30 and Dec. 1, Thurs. and Friday.	Thanksgiving recess.
December 22 to January 1.	Christmas recess.
January 2, Tuesday.	Work resumed.
January 19, Friday.	Foundation Day: a holiday.
January 22, Monday.	Final examinations begin.
January 30, Tuesday, 5:00 p.m.	First semester ends.

SECOND SEMESTER

Jan. 31 and Feb. 1, Wed. and Thurs.	Matriculation and registration.
February 1, Thursday.	Enrollment in classes.
February 2, Friday.	Recitations and lectures begin.
February 22, Thursday.	Washington's Birthday: a holiday
April 5, Thursday, 12 m.	Easter vacation begins.
April 10, Tuesday.	Work resumed.
May 30, Wednesday.	Memorial Day: a holiday.
June 1, Friday.	Final examinations begin.
June 9, Saturday, 5:00 p.m.	Second semester ends.
June 13, Wednesday.	Commencement.

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Prefatory Note

Indiana University is the State University of Indiana, and the head of the public school system of the State. It takes its origin from the State Seminary, which was established by act of the legislature, approved January 20, 1820. In 1828 the title of the Seminary was changed by the legislature to that of the Indiana College, and in 1838 the University was given its present name. In 1867 Indiana University became coeducational.

The University comprises the following schools:

- The College of Liberal Arts, founded as the Indiana Seminary in 1820.
- The School of Law, organized in 1842 and reorganized in 1889.
- The School of Medicine, organized in 1903, and reorganized in 1908.
- The Graduate School, organized in 1904.
- The School of Education, organized in 1908.
- The Extension Division, organized in 1912.

The first advanced degrees conferred for graduate work were granted in 1882. During the 'eighties, well-defined regulations for graduate work and graduate degrees were stated in the University Catalog, and a considerable number of graduate students were enrolled, especially in the natural sciences. In the years 1882 to 1893, inclusive, the University graduated fourteen Doctors of Philosophy, ninety-nine Masters of Arts, and twelve Masters of Science. For some years following 1893, however, the Doctor's degree was not conferred.

In 1904, there took place the segregation and formal organization of the Graduate School, and in 1908 the office of Dean of the Graduate School was created.

This number of the Bulletin is devoted to setting forth the facilities for graduate work in the several departments of the University. Courses intended primarily for graduate students are described in full. Brief announcements are given of courses

intended for both graduates and undergraduates. For further description of the latter courses, see the bulletin of the College of Liberal Arts, or under that heading in the University Catalog.

The attention of graduates of other Indiana colleges is invited to the announcement on page 16 of ten fellowships established by the Board of Trustees for such students. The value of these fellowships is \$200 each; they also carry with them exemption from Contingent and Library fees. For further information concerning the Graduate School, address,

THE DEAN OF THE GRADUATE SCHOOL,
Bloomington, Indiana.

Officers and Faculty of the Graduate School

COUNCIL

*CARL H EIGENMANN, Ph.D., Dean of the Graduate School, and Professor of Zoölogy.

ROBERT EDWARD LYONS, Ph.D., Professor of Chemistry.

ARTHUR LEE FOLEY, Ph.D., Professor of Physics.

DAVID MYERS MOTTIER, Ph.D., Professor of Botany.

ULYSSES GRANT WEATHERLY, Ph.D., Litt.D., Professor of Economics and Sociology.

ERNEST HIRAM LINDLEY, Ph.D., Professor of Philosophy and Psychology.

BURTON DORR MYERS, A.M., M.D., Professor of Anatomy.

SAMUEL BANNISTER HARDING, Ph.D., Professor of European History.

BERT JOHN VOS, Ph.D., Professor of German.

DAVID ANDREW ROTHROCK, Ph.D., Professor of Mathematics.

WILLIAM J MOENKHAUS, Ph.D., Professor of Physiology.

ALFRED MANSFIELD BROOKS, A.M., Professor of Fine Arts.

WILL DAVID HOWE, Ph.D., Professor of English.

WILLIAM WESLEY BLACK, A.M., Dean of the School of Education, and Professor of Elementary Education.

EDGAR ROSCOE CUMINGS, Ph.D., Professor of Geology.

SELATIE EDGAR STOUT, Ph.D., Professor of Latin.

GEORGE DAVIS MORRIS, Dr.d'Univ.(Paris), Associate Professor of French.

FRANK WILLIAM TILDEN, A.M., Associate Professor of Greek.

GUIDO HERMANN STEMPFL, A.M., Associate Professor of Comparative Philology.

WILBUR ADELMAN COGSHALL, A.M., Associate Professor of Astronomy.

FRANK GREENE BATES, Ph.D., Associate Professor of Political Science, and Secretary of the Council.

FACULTY OF THE GRADUATE SCHOOL

WILLIAM LOWE BRYAN, Ph.D., LL.D., President of the University.

HORACE ADDISON HOFFMAN, A.M., Professor of Greek.

JAMES ALBERT WOODBURN, Ph.D., LL.D., Professor of American History.

*CARL H EIGENMANN, Ph.D., Professor of Zoölogy, and Director of the Biological Station.

ROBERT EDWARD LYONS, Ph.D., Professor of Chemistry.

ARTHUR LEE FOLEY Ph.D., Professor of Physics.

DAVID MYERS MOTTIER, Ph.D., Professor of Botany.

ALBERT FREDERICK KUERSTEINER, Ph.D., Professor of Romance Languages.

*Relieved of teaching duties from August 1, 1915, to August 1, 1916.

- ULYSSES GRANT WEATHERLY, Ph.D., Litt.D., Professor of Economics and Sociology.
- ERNEST HIRAM LINDLEY, Ph.D., Professor of Philosophy and Psychology.
- BURTON DORR MYERS, A.M., M.D., Professor of Anatomy.
- SAMUEL BANNISTER HARDING, Ph.D., Professor of European History.
- AMOS SHARTLE HERSHAY, Ph.D., Professor of Political Science and International Law.
- BERT JOHN VOS, Ph.D., Professor of German.
- WILLIAM A. RAWLES, Ph.D., Professor of Political Economy.
- CARL WILHELM FERDINAND OSTHAUS, A.M., Professor of German.
- SCHUYLER COLFAX DAVISSEN, Sc.D., Professor of Mathematics.
- DAVID ANDREW ROTHROCK, Ph.D., Professor of Mathematics.
- WILLIAM J. MOENKHAUS, Ph.D., Professor of Physiology.
- LOUIS SHERMAN DAVIS, Ph.D., Professor of Chemistry.
- ALFRED MANSFIELD BROOKS, A.M., Professor of Fine Arts.
- WILL DAVID HOWE, Ph.D., Professor of English.
- WILLIAM WESLEY BLACK, A.M., Dean of the School of Education, and Professor of Elementary Education.
- CHARLES JACOB SEMBOWER, Ph.D., Professor of English.
- EDGAR ROSCOE CUMINGS, Ph.D., Professor of Geology.
- *WILLIAM FREDERICK BOOK, Ph.D., Professor of Educational Psychology.
- ROBERT JOSSELYN LEONARD, A.M., Director of Vocational Education.
- SELATIE EDGAR STOUT, Ph.D., Professor of Latin.
- WILLIAM BAIRD ELKIN, Ph.D., Acting Professor of Philosophy.
- JOHN WELHOFF TODD, Ph.D., Acting Professor of Educational Psychology.
- GEORGE DAVIS MORRIS, Dr. d'Univ. (Paris), Associate Professor of French.
- FRANK WILLIAM TILDEN, A.M., Associate Professor of Greek.
- GUIDO HERMANN STEMPERL, A.M., Associate Professor of Comparative Philology.
- CHARLES ALFRED MOSEMILLER, A.B., Associate Professor of Romance Languages.
- ROLLA ROY RAMSEY, Ph.D., Associate Professor of Physics.
- *OLIVER W. BROWN, A.M., Associate Professor of Chemistry.
- FRANK MARION ANDREWS, Ph.D., Associate Professor of Botany.
- LILLIAN GAY BERRY, A.M., Associate Professor of Latin.
- HENRY THEW STEPHENSON, B.S., A.B., Associate Professor of English.
- WILBUR ADELMAN COGSHALL, A.M., Associate Professor of Astronomy.
- ULYSSES SHERMAN HANNA, Ph.D., Associate Professor of Mathematics.
- JOSHUA WILLIAM BEDE, Ph.D., Associate Professor of Geology.
- FRANK GREENE BATES, Ph.D., Associate Professor of Political Science.
- FRANK CURRY MATHERS, Ph.D., Associate Professor of Chemistry.
- CLARENCE EARL MAY, Ph.D., Associate Professor of Chemistry.
- †MELVIN EVERETT HAGGERTY, Ph.D., Associate Professor of Psychology.
- FERNANDUS PAYNE, Ph.D., Associate Professor of Zoölogy.
- MABEL THACHER WELLMAN, A.B., Associate Professor of Home Economics.
- HUBERT GUY CHILDS, A.M., Associate Professor of Education.
- ‡RICHARD ASHLEY RICE, A.M., Associate Professor of English.

*Absent on leave from August 1, 1915, to August 1, 1916.

†Resigned, February 15, 1916.

‡Resigned. Resignation to be effective August 1, 1916.

- JOHN BENJAMIN DUTCHER, Ph.D., Associate Professor of Physics.
GEORGE FULLMER REYNOLDS, Ph.D., Associate Professor of English.
JAMES M VAN HOOK, A.M., Assistant Professor of Botany.
WILL SCOTT, Ph.D., Assistant Professor of Zoölogy.
ROBERT E BURKE, A.M., Assistant Professor of Fine Arts.
FRED A MOLBY, Ph.D., Assistant Professor of Physics.
ELIZABETH SAGE, Assistant Professor of Home Economics.
FRANK TENNEY STOCKTON, Ph.D., Assistant Professor of Economics and Sociology.
ALBERT LUDWIG KOHLMEIER, A.M., Assistant Professor of History.
KENNETH POWERS WILLIAMS, Ph.D., Assistant Professor of Mathematics.
PRESTON ALBERT BARBA, Ph.D., Assistant Professor of German.
*JAMES GROVER McDONALD, A.M., Assistant Professor of History.
JOHN AMBROSE HESS, A.M., Assistant Professor of German.
JACOB A. BADERTSCHER, Ph.D., Assistant Professor of Anatomy.
FRANCES LUCY SWAIN, B.S., A.M., Assistant Professor of Home Economics.
WILLIAM ANDREW MYERS, A.M., Lecturer on School Administration.
CLARENCE EDMUND EDMONDSON, Ph.D., Instructor in Physiology.
LOGAN ESAREY, Ph.D., Instructor in Western History.
JESSE JAMES GALLOWAY, Ph.D., Instructor in Geology.
MILDRED ARBRO HOGE, Ph.D., Instructor in Zoölogy.
ERNEST MARSHALL LINTON, Ph.D., Instructor in Political Science.
GEORGE CLYDE HALE, A.B., Instructor in Chemistry.

*Absent on leave from August 1, 1915, to August 1, 1916.

The Graduate School

GENERAL STATEMENT

Purpose and Administration. The Graduate School furnishes opportunities for advanced work leading to careers in higher education and in certain lines of investigation. It does not offer work leading to professional degrees in law or in medicine.

The work of the School is a direct continuation of that of the College of Liberal Arts; as such it is the most advanced work in education undertaken by the State.

The School is administered by the Council of the Graduate School. It is composed of members of the Faculty representing different fields of learning.

Not all departments of the University are at present equally equipped for graduate work. In recognition of this fact, the amount of graduate work offered by the different departments varies. Some departments offer work for the A.M. degree only, while others offer work leading to the Ph.D. degree.

Admission. Students holding a Bachelor's degree in Arts, or in Science, from Indiana University, or the same degree, or its equivalent, from institutions of similar rank, are admitted to the Graduate School on presentation of satisfactory credentials, which should include a certificate of graduation and a transcript of the college record. Persons holding the Bachelor's degree from institutions whose requirements are considered to lack a year, or more, of being the equivalent of the A.B. degree from this institution, are not admitted to the Graduate School. They may enter the College of Liberal Arts, and are referred to the Dean of the College for their standing. Holders of the A.B. degree, or its equivalent, from institutions whose requirements lack less than a year of being the equivalent of the A.B. degree from this institution may be admitted to the Graduate School. In such cases, work in addition to the minimum of thirty hours for the A.M. degree will be required. The amount will be determined in each case by the Council of the Graduate School. In all cases, the student must complete to the satisfaction of the department of the major subject the grad-

uate work required in that department for the A.M. or the Ph.D. degree.

All graduate students will enroll at the beginning of each semester, and those entering regularly organized classes will submit to the same regulations as undergraduate students. Work will in many cases be individual and not controlled by a recitation schedule. At the time of entrance to the Graduate School the student must submit a plan of the entire work he wishes to present for the Master's or Doctor's degree. This plan must be approved by the professor of the major subject and the Dean of the Graduate School. Graduate work done before filing such plan will ordinarily not be counted toward advanced degrees.

The Library. The library of Indiana University at present contains over 108,000 cataloged volumes. The selection of these books has been made with a view to facilitating instruction and research. The collection is a well-balanced one, but is especially strong in literary and scientific periodicals. The list of periodicals received and permanently kept on file by the library numbers about four hundred, and includes American, English, German, French, and, to a less extent, Italian, Spanish, and Swedish publications. The library is made thoroly usable by a carefully prepared card catalog, by indexes, and by other bibliographical aids.

In the library building are seminary rooms for the Departments of History, Economics, Philosophy, German, Romance Languages, Latin, Greek, and Political Science.

In addition to the central library, where the general literary and historical collections are housed, there are nine departmental collections, of varying sizes, kept in the different University buildings.

All books, with the exception of periodicals and books reserved for reference, may be drawn for home use. Each student may draw books for two weeks, with privilege of renewal, but subject to recall.

The library is open Monday to Friday, from 7:45 a.m. to 10:00 p.m., and on Saturdays from 8:00 a.m. to 5:00 p.m.

Fees. Students who are legal residents of the State of Indiana are charged a Contingent fee of seven and one-half dollars a semester, and a Library fee of one and one-half dollars a semester. These fees cover in part the cost of the physical maintenance of the University, and are not applied to the cost of tuition, which is provided wholly by the State.

Students not legal residents of the State of Indiana will be charged a Contingent and Library fee amounting to thirty dollars a semester. The Summer session fee is fifteen dollars, irrespective of the length of the course, except for a half-term's work in law, where ten dollars is charged.

The Laboratory fees in all courses are uniformly one dollar and a half per credit hour,* except in the School of Medicine, and for courses in domestic art. In the latter case the fee is one dollar a semester.

The Gymnasium fee, if the work in physical education is taken, is one and one-half dollars a semester.

An Examination fee of one dollar is charged for each make-up, or special, examination. This fee is paid to the Bursar; his receipt, when presented to the proper instructor, constitutes the authorization for holding the examination.

The fee for any Degree is five dollars, and must be paid to the Bursar at least thirty days before graduation.

DEGREES

Three advanced degrees, Master of Arts, Master of Science, and Doctor of Philosophy, are conferred by the University.

Master of Arts. The degree Master of Arts may be conferred upon Bachelors of Arts of this University, or of any other institution of equivalent standing, or upon Bachelors of Science provided this degree is an alternative equivalent of the A.B. degree, following a residence at the University of a minimum of two semesters and the completion of a minimum of thirty hours of University credit.

Credits earned in excess of those required for the A.B. or the B.S. degrees, before the degree is conferred or a certificate of the completion of the work for the degree is issued, are not counted toward the A.M. degree without special action of the Graduate Council before the work is done.

Twenty of the total of thirty hours required for the A.M. degree must be in one department, or in closely allied departments. Ten hours must be distinctly graduate in character. There is no restriction as to the amount of work that may be carried during any semester.

*The increased cost of chemicals and other laboratory supplies, owing to the European war, necessitated an increase of ten to fifteen percent in the laboratory fees of certain departments in 1915-16.

The work for the A.M. degree may all be done in Summer sessions, provided that the work for the degree be completed within five years.

Professional studies are not accepted for the graduate degrees, but research work on professional subjects may be accepted for these degrees at the option of the professor in charge of the major subject.

A thesis is required in all departments except in the Departments of English and Latin.

Freshman courses shall not be counted on advanced degrees.

The first ten hours in beginning French and German do not count on advanced degrees except by permission of the Graduate Council, on the written recommendation of the professor in charge of the major subject. The Council shall in such cases fix the amount of credit to be given. The amount of credit that a student may receive for elementary courses in other subjects is determined by the professor in charge of the major subject.

It is strongly urged that all students gain some proficiency in foreign modern language before entering the Graduate School. Credit in ten hours in modern foreign language, or the certified equivalent, is required of candidates for the A.M. degree. If the candidate does not meet this requirement before entering the Graduate School, he must obtain credit for ten hours of foreign language in addition to the regular thirty hours required for the A.M. degree, unless by special act of the Graduate Council partial credit is allowed for this work in accordance with the provisions noted in the preceding paragraph.

Master of Science. The degree Master of Science may be conferred upon Bachelors of Science of Indiana University under the same conditions upon which the degree of Master of Arts is conferred on Bachelors of Arts.

Doctor of Philosophy. The degree Doctor of Philosophy may be conferred upon graduates of this University, or of any institution of similar character and rank, upon the completion of an advanced course of study of not less than three years.

Each candidate for this degree will select a major subject consisting of the work of some one department or recognized subdivision of a department; and not less than two minors, at least one of which must be in some department related to, but distinct from, that of the major subject.

The course for the degree will be pursued under the direction

of a committee consisting of the heads of the departments in which the work is done. Its value will be determined by a final examination, and by the presentation of a satisfactory thesis. The thesis should usually embody original work upon some prescribed or accepted subject; it must always give evidence that the candidate is capable of forming an independent judgment upon the recent literature of his department.

A detailed statement of the work offered for the degree, indorsed by the professor in charge of the major subject, must be submitted to the Council of the Graduate School not later than May 10 of the year in which the candidate presents himself for examination.

On the recommendation of the professor in charge of the major subject, and with the concurrence of the Council of the Graduate School, part of the three years' study required for this degree may be spent in residence at other universities.

The thesis of every candidate for the Doctor's degree shall be presented to the Council of the Graduate School on or before the first day of June of the year in which he is a candidate for the degree. The thesis must be indorsed by the head of the department as being in its final form, and ready for the press. If the candidate is recommended for the degree, arrangements must be made to deposit five printed copies of the thesis in the library.

Examinations of each candidate for this degree will be conducted by a committee consisting of all the instructors under whom graduate work has been taken, in the presence of such members of the Faculty of the School as care to attend.

At least one year before the final examination the candidate shall satisfy the professor in charge of the major subject of his ability to use French and German for purposes of investigation.

Application for Degrees. Application for advanced degrees must be filed with the Dean at the time of admission to the Graduate School. Application for the Doctor's degree must be on file at least one year before the candidate is admitted to the examination.

FELLOWSHIPS

University Fellowships. A number of University fellowships are available for graduate students. These fellowships carry with them an honorarium of between \$200 and \$500 annually. The highest amount will ordinarily be paid only if the incumbent

is appointed for a third year. A fellowship is a recognition of scholarship. A portion of the fellow's time may be required in the service of the department in which he is appointed. Appointments are for one year.

Lawrence Fellowship in Astronomy. The Lawrence Fellowship of the Department of Astronomy has been established by Mr. Percival Lowell, of the Lowell Observatory, upon the following terms and conditions:

1. The fellowship shall be known as the Lawrence Fellowship, in remembrance of the donor's mother, and is established in perpetuity, revocable, however, at any time at the will of the founder.
2. It shall be annually available and shall cover the college calendar year, that is, from commencement to commencement of the same.
3. The applicant shall be appointed by the Department, the donor reserving the right of finally passing upon the suitability of the candidate so presented.
4. The fellow shall be given time and opportunity for an original thesis on some astronomical subject looking to the taking of a Master's degree, the nature of which shall be decided by the Director and the fellow. But the fellow shall be expected to give general assistance in the work of the observatory during the period of his fellowship.
5. The fellowship will pay \$600 and the fellow's traveling expenses to and from the Observatory at Flagstaff, Ariz.; and a furnished room at the Observatory shall be free to the fellow's use.

Fellowships for Graduates of Other Indiana Colleges. The Trustees of Indiana University, at their March meeting, 1910, established ten graduate fellowships of an annual value of \$200 each, to be held by graduates of other colleges in the State. In awarding these fellowships the policy will be to assign them to the most promising students, irrespective of the special field of study in which they wish to work, or the particular institutions from which they come. As between cases of equal merit, however, attention will be given to securing a distribution of the awards among different departments of study and different colleges of the State.

Applicants for these fellowships should file a statement of their educational history and of their plans with the Dean of the Graduate School. They should indicate in this statement the major subject which they wish to pursue, and give a transcript of their college record. They should also present at this time recommendations from their instructors, and such other evidences of their fitness as they can offer. Applications will be received up to March 1 of each year.

Applications will be referred in each case to the department concerned for a decision upon the respective merits of the applicants in that department. On the basis of the departmental reports, the Graduate Council will recommend to the Trustees the most eligible candidate for appointment.

These fellowships are not open to students doing professional work in Law or in Medicine.

For application blanks, and further information, address the Dean of the Graduate School.

Special Fellowships. There are besides the fellowships mentioned above, three special fellowships ranging in value from \$500 to \$1,000. These fellowships are created only for men of exceptional ability and merit, who may or may not have received the Ph.D. degree.

Special Rules Concerning Fellows. Holders of fellowships may be required to render some service to the University and are not permitted, without the special permission of the Graduate Council, to do other work for remuneration.

All fellows are exempted from the payment of semester fees.

UNIVERSITY ORGANIZATIONS

The Graduate Club. The Graduate Club was founded in 1910 to establish closer relations among the graduate students, and between graduate students and the members of the Faculty. Thru closer association and acquaintanceship, the club aims to foster solidarity of interest. The meetings are in part social, and in part devoted to the presentation of papers by the members of the club, giving the results of some investigation carried on by the author. In this way students in the different departments are made acquainted with the work in various lines of research carried on in the University. Occasionally addresses are given by visitors of prominence. Membership in the club is open to all graduate students.

Sigma Xi. Sigma Xi is an organization especially for scientific students. It is a chapter of a national scientific fraternity, to which members of the Faculty and graduate students may be elected. Its object is to encourage investigation in science, pure and applied.

Phi Beta Kappa. Phi Beta Kappa is a chapter of the oldest Greek-letter fraternity, founded in 1776 for "the promotion of

scholarship and friendship among students and graduates of American colleges". It is today no longer a secret society, but an honor society, having for its special aim the encouragement of liberal culture. At Indiana University a certain number of Seniors, not over ten percent, are elected each year, partly at Thanksgiving and partly at Commencement. The membership includes also certain members of the Faculty, and a few others chosen directly from the ranks of the alumni. The chapter was established on Foundation Day, 1911.

Departmental Clubs. The following departments have special departmental clubs: Physics, Chemistry, History and Political Science, Philosophy, English, Mathematics, German, Romance Languages (two clubs, French and Spanish), Home Economics, Botany, Economics and Sociology, and Comparative Philology. Membership in these clubs is open to Faculty members of the departments, graduate students, and undergraduates. The purpose of the clubs is to discuss topics of interest to members, and to promote social intercourse.

WATERMAN INSTITUTE FOR SCIENTIFIC RESEARCH

At a meeting of the Trustees of the University on May 12, 1915, Dr. Luther Dana Waterman, Professor Emeritus of Medicine in the Indiana University School of Medicine, presented to the Trustees deeds for property amounting in value to \$100,000, on the following conditions:

1. That he shall retain the management and income from the property during his lifetime.
2. That the proceeds from the property be devoted to the establishment and permanent maintenance of an Institute for Scientific Research.
3. That the Trustees bind themselves to appropriate annually an amount of money for the Institute equal to the annual proceeds from the property.

The Trustees accepted the proposal of Dr. Waterman in the following terms: "Resolved, That the generous gift of Dr. Luther D. Waterman to the University for the purpose therein stated be and is hereby accepted with the thanks of the Board. We hereby pledge the faith of the institution to carry out the conditions therein contained."

Departments and Courses of Instruction, 1916-17

**In the following list are included many courses which are open alike to graduates and advanced underclassmen. Only a skeleton announcement of these is here made; for full description see the bulletin of the College of Liberal Arts, or under that heading in the University Catalog. Strictly graduate courses are described in full. The more elementary courses are not listed here at all.

Graduate School of Arts and Sciences

DEPARTMENT OF GREEK

HORACE A. HOFFMAN, Professor.
FRANK W. TILDEN, Associate Professor.

The time that may be at present profitably devoted to graduate work in Greek is one year, leading to the A.M. degree. A thesis on some subject connected with the seminary work of the year is required for the degree.

All candidates for the A.M. degree with Greek as major subject are recommended to take at least ten hours in Latin, in advance of the Latin taken in the undergraduate study.

Courses 9, 12, and 13, or any part of these courses, are also open as minors to graduate students who have not already had as part of their undergraduate study the work which they take in these courses for graduate credit.

Following are the courses open to graduate students in the Department:

9. Lyric and Dramatic Poetry. Associate Professor TILDEN.
First and Second semesters, daily, at hours to be arranged.]
Omitted in 1916-17.
12. Philosophical Prose. Professor HOFFMAN.
First and Second semesters, T. Th., at 10:00.
13. Historical and Rhetorical Prose. Associate Professor TILDEN.
First and Second semesters, M. W. F., at hours to be appointed.

15A. Graduate Seminary. Euripides is the author usually studied, but other authors may be selected. Professor HOFFMAN.
First and Second semesters, Th., at hours to be appointed.

15B. Graduate Seminary. Author studied to be selected. Associate Professor TILDEN.
First and Second semesters, F., at hours to be appointed.

DEPARTMENT OF LATIN

SELATIE E. STOUT, Professor.

LILLIAN G. BERRY, Associate Professor.

Students who begin the graduate study of Latin after having completed an undergraduate course in the subject equivalent to that required of a major in the Department in Indiana University can complete the work for the Master's degree in one year. In special cases the work can all be done in summer sessions, but it can be done more satisfactorily in a year of continuous residence. The writing of a thesis is not required of all candidates for the Master's degree, but it is advised for those who expect to take additional work looking to the degree of Doctor of Philosophy. The thesis, if written, will be allowed to count for one graduate course thru one semester, and its development will be rather closely supervised by conferences with the professor in charge. The work required for the Master's degree, while affording an introduction to the methods of investigation, is arranged primarily to give a wider and more thoro acquaintance with the language and literature, institutions and history of the Roman people. It is hoped that this will meet equally well the needs of those who wish to become better teachers of Latin in the high schools and the lower grades of the college course, and of those who desire a proper foundation for the more advanced study of Latin.

The purely graduate courses at present offered, and those to be added, will be given in a series such as to offer opportunity for a three years' course of graduate study. Candidates for the Ph.D. degree whose major subject of study is Latin are required to make Greek their principal minor subject. A wide range of choice will be allowed for the second minor subject, the only requirement being that such courses shall contribute in some definite way to the principal work of the candidate. Every library resource required for investigations assigned by the Department will be supplied if not at present in the library.

The Junior and Senior reading courses (Courses 33A, B, C, D, and 41A, B, C, D) of the undergraduate work may be taken for graduate credit if certain additional work of graduate character assigned by the instructor be done in connection with them. The authors read in these courses are varied in different years, and thru a three-year period afford graduate students opportunity for a wide course of reading.

31. History of Latin Literature. Associate Professor BERRY.

First semester, T. Th., at 9:00.

- [33A. Cicero: Tusculan Disputations, Book i. Associate Professor BERRY.
First semester, M. W. F., at 9:00.]
Omitted in 1916-17.

- [33B. Plautus. Associate Professor BERRY.

Second semester, M. W. F., at 9:00.]

Omitted in 1916-17.

- 33C. Prose of the Empire. Associate Professor BERRY.

First semester, M. W. F., at 9:00.

- 33D. Juvenal: Selected Satires. Associate Professor BERRY.

Second semester, M. W. F., at 9:00.

- [41A. The Classical Historians of Rome: Sallust, Livy. Professor STOUT.

First semester, M. W. F., at 11:00.]

Omitted in 1916-17.

- [41B. Vergil: 'Aeneid', 'Bucolics', and 'Georgies'. Professor STOUT.

Second semester, M. W. F., at 11:00.]

Omitted in 1916-17.

- 41C. Cicero: Orations. Professor STOUT.

First semester, M. W. F., at 11:00.

- 41D. Readings from the Latin poets. Professor STOUT.

Second semester, M. W. F., at 11:00.

43. Advanced Prose Composition. Professor STOUT.

Second semester, T. Th., at 11:00.

- [51. Latin Inscriptions. A course to teach the use of inscriptions for purposes of investigation. Professor STOUT.]
Omitted in 1916-17.

52. The Topography and Monuments of Ancient Rome. This subject is studied from ancient and medieval sources; Greek and Latin literature, inscriptions, the Capitoline plan, regional catalogs, coins, reliefs, medieval itineraries, maps, and sketches. The information drawn from these sources is studied in the light of recent researches. Associate Professor BERRY.

First and Second semesters, T., 4:00 to 5:50.

Open to graduates only.

53. The Reign of Augustus Caesar. Studied from the sources. The authors and inscriptions bearing on this period are read with special reference to the changes in the system of government by which the republic passed into the empire, and to the conditions which made these changes necessary. Professor STOUT.

Summer session, daily, at 9:00.

- [61. Seminary: The Letters of Pliny the Younger. The first half of this course is an introduction to the science of text criticism, based on the text of the Letters of Pliny. The second half of the course is a series of studies on topics connected with the language and the subject-matter of the letters. Professor STOUT.

First and Second semesters, Th., 4:00 to 5:50, and another hour to be arranged.

Open to graduate students only.]

Omitted in 1916-17.

62. Seminary: Political Problems of the Romans. A study from the sources of problems of government developed and solved by the Roman people, first for the city and Italy, and later for the empire. The latter part of the course is devoted principally to problems connected with the administration of the provinces and the municipalities under the empire. Professor STOUT.

First and Second semesters, Th., 4:00 to 5:50.

Open to graduate students only.

DEPARTMENT OF ROMANCE LANGUAGES

ALBERT F. KUERSTEINER, Professor of Romance Languages.

GEORGE D. MORRIS, Associate Professor of French.

CHARLES A. MOSEMILLER, Associate Professor of Romance Languages.

The Department of Romance Languages offers one year of graduate work, leading to the degree of Master of Arts.

Following are the courses open to graduate students in the Department:

7. Seventeenth Century Poetry and Drama. Professor KUERSTEINER. First and Second semesters, M. W. F., at 9:00.
- [24. Eighteenth Century Poetry and Drama. Professor KUERSTEINER. First and Second semesters, M. W. F., at 9:00.]
- Omitted in 1916-17.
- [10. Nineteenth Century: The Romantic Period. Associate Professor MORRIS. First and Second semesters, M. W. F., at 10:00.]
- Omitted in 1916-17.
27. Nineteenth Century: The Realistic Period. Associate Professor MORRIS. First and Second semesters, M. W. F., at 10:00.

- [32. Contemporary Fiction. Associate Professor MORRIS.
First and Second semesters, T. Th., at 10:00.]
Omitted in 1916-17.
33. Contemporary Drama. Associate Professor MORRIS.
First and Second semesters, T. Th., at 10:00.
26. Advanced Composition. Associate Professor MOSEMILLER.
First and Second semesters, T. Th., at 9:00.
28. Senior Composition. Associate Professor MOSEMILLER.
First and Second semesters, T. Th., at 2:00.
13. Old French. Reading of texts; study of Old French phonology and morphology; exercises in tracing words from Classical and Vulgar Latin to Modern French. Lectures. Associate Professor MOSEMILLER.
First and Second semesters, M. W. F., at 2:00.
Paris, 'Extraits de la Chanson de Roland'; Suchier, 'Aucassin et Nicolet' (French edition); Constans, 'Chrestomathie du moyen-âge'; Paris-Langlois, 'Extraits des chroniqueurs français'.
Open to students who have studied Latin and French.
35. Vulgar Latin. Lectures on the phonology and morphology of Vulgar Latin; relation to Classical Latin and to the Romance Languages. Professor KUERSTEINER.
First and Second semesters, T. Th., at 11:00.

DEPARTMENT OF GERMAN

BERT J. VOS, Professor.
 CARL W. F. OSTHAUS, Professor.
 PRESTON A. BARBA, Assistant Professor.
 JOHN A. HESS, Assistant Professor.

In conjunction with the Department of Comparative Philology, which offers courses in Gothic, Old High German, and Old Norse, the Department at present gives about forty hours of graduate work. Students entering upon the graduate study of German must previously have completed the courses required for a major in the Department, or their equivalent. Courses 27 and 29 are, however, open to students of departments other than German upon the completion of the work of the Junior year. The periodicals and the more important works of reference are placed in the Seminary Room, to which graduate students have access.

For Gothic and Old High German, see Courses 4 and 9 of the Department of Comparative Philology.

Following are the courses open to graduate students in the Department:

14. German Usage. Assistant Professor HESS.
Second semester, T. Th., at an hour to be appointed.
30. Studies in the Modern German Drama. Lectures, reports, interpretations. The authors treated in this course differ from year to year. In 1915-16 the drama of Hebbel was studied. Conducted in German. Professor OSTHAUS.
First semester, M. W. F., at an hour to be appointed.
28. Journal Club. This course is introductory to the work of the German Seminary. Members make reports upon the contents of current numbers of journals devoted to German literature and philology, and are trained in the use of important works of reference. Two to five hours' credit. Professor Vos.
First semester, two hours weekly, at an hour to be appointed.
22. German Seminary: Schiller. Conducted, so far as feasible, in German. Two to five hours' credit. Professor Vos and Assistant Professor BARBA.
Second semester, two hours weekly, at an hour to be appointed.
Open to students who have completed Course 28.
27. Middle High German. Outline of the phonology, accidence, and syntax. Reading of selections from the lyric poets, the popular and court epic. Conducted in German. Professor Vos.
First semester, two hours weekly, at an hour to be appointed.
Paul, 'Mittelhochdeutsche Grammatik'.
29. History of the German Language. The relation of German to other Germanic languages; the dialect divisions of Modern German; origin of the literary language; changes since the middle period; history of German orthography. Professor Vos.
Second semester, two hours weekly, at an hour to be appointed.
31. Research. Individual conferences on subjects assigned for investigation to candidates for higher degrees. Professor Vos.
First and Second semesters, at hours to be arranged.

DEPARTMENT OF COMPARATIVE PHILOLOGY

GUIDO H. STEMPLE, Associate Professor.

The graduate courses offered below will be extended as required. They may be supplemented by certain of the courses listed as undergraduate, as well as by certain courses given in the other language departments and in History, Sociology (Descriptive Sociology), Philosophy, and English.

- [5. Comparative Philology of the Classical Languages. An advanced course in the science of language and Indo-European philology. Associate Professor STEMPLE.
First and Second semesters, M. W. F., at 10:00.
Gi'es, 'Manual of Comparative Philology for Classical Students'. Open to students who have passed in Courses 2 and 3, and in twenty hours of language, and to advanced students in Latin or Greek.] Omitted in 1916-17.
- 4. Gothic. Grammar and reading; phonology of the early Germanic languages. Associate Professor STEMPLE.
First and Second semesters, T. Th., at 10:00.
Wright, 'Grammar of the Gothic Language'; Streitberg, 'Die gotische Bibel'.
Open to students who have passed in Course 2 and in twenty hours of language, and to others at the option of the instructor.
Given every other year, alternating with Course 9.
- [8. Sanskrit. Mr. _____.
First and Second semesters, M. W. F., at 10:00.
Perry, 'Sanskrit Primer' (or Lanman, 'Sanskrit Reader'); and Whitney, 'Sanskrit Grammar'.
Open to advanced students in Latin or Greek at the option of the instructor.] Omitted in 1916-17.
- 9. Old High German. Elements of the grammar, reading of selected texts, study of dialectal divergence. The method will be both comparative and historical. Associate Professor STEMPLE.
First and Second semesters, T. Th., at 10:00.
Wright, 'Old High German Primer'; Braune, 'Althochdeutsche Grammatik'; Braune, 'Althochdeutsches Lesebuch'.
Open to students on same conditions as Course 4.] Omitted in 1916-17. Given every other year, alternating with Course 4.
- [10. Middle High German. Elements of the grammar, reading of easy texts. 'Nibelungenlied', with special study of the popular epic.
First and Second semesters, T. Th., at 10:00.

Wright, 'Middle High German Primer'; Paul, 'Mittelhochdeutsche Grammatik'; Robertson, 'Der Arme Heinrich'; Zarneke, 'Das Nibelungenlied'.

Open to students on same conditions as Course 4.]
Omitted in 1916-17.

11. Old Icelandie. Introduction to the language, and the reading of texts that throw light upon the popular literature of England and Germany. Associate Professor STEMPER.

First and Second semesters, M. W. F., at 11:00.

Sweet, 'Icelandic Primer'; Heusler, 'Altländisches Elementarbuch'; selected texts.

Open to students who have passed in ten hours of Germanic philology and to others at the option of the instructor.

15. Seminary in Historical English Grammar. Associate Professor STEMPER.

First and Second semesters, W., 2:00 to 3:50.

DEPARTMENT OF ENGLISH

WILL D. HOWE, Professor.

CHARLES J. SEMBOWER, Professor.

HENRY T. STEPHENSON, Associate Professor.

*RICHARD A. RICE, Associate Professor.

GEORGE F. REYNOLDS, Associate Professor.

The Department is prepared to offer research work leading to the A.M. and Ph.D. degrees, in the following periods: Elizabethan literature, the literature of the seventeenth century, of the eighteenth century, and of the first half of the nineteenth century.

For the A.M. degree, the candidate should have had in his undergraduate work the equivalent of thirty hours of English, and should, in his graduate work, pursue a course restricted to three subjects, approved by the Department of English.

For the Ph.D. degree, the candidate will be expected to do at least two full years' work in residence after the Master's degree. He must be able to read German and French, and to do a piece of independent research which will be acceptable to the Department.

The following courses are open to graduate students in the Department:

51. Elizabethan Non-Dramatic Literature. A study of Elizabethan prose and poetry (exclusive of the drama) from the appearance of Tottel's 'Miscellany' (1557) to 1625, with special emphasis on Spenser and Bacon. Associate Professor REYNOLDS.

First and Second semesters, T. Th., at 11:00.

*Resigned. Resignation to be effective August 1, 1916.

52. The Drama. The study of the drama from the beginning of the Elizabethan period to the end of the eighteenth century. Associate Professor STEPHENSON.
First and Second semesters, M. W. F., at 11:00.
53. Shakspere. About thirty representative plays of the Elizabethan period are studied, with emphasis on Shakspere's plays. Associate Professor STEPHENSON.
First semester, M. W. F., at 10:00.
54. Eighteenth Century Problems. A reading of Leslie Stephen's 'English Thought in the Eighteenth Century' and the discussion of some of the questions. Professor HOWE.
First and Second semesters, two hours each week.
55. Nineteenth Century Thought. In this course are considered the more important questions of the nineteenth century with the object of showing how they have been reflected in the literature of the century. Professor SEMBOWER.
First and Second semesters, T. Th., at 10:00.
56. The Art of Poetry. Studies in criticism. The meaning of poetic thought; poetic answers to great questions; the relation of poetry to other modes of thought and expression. Specific illustration from a collection of verse and from the work of some one great poetic thinker. The course does not deal, except incidentally, with the subject of metrics. Associate Professor RICE.
Second semester, M. W. F., at 11:00.
57. Literary Criticism. A study of the history and principles of literary criticism. Lectures on Aristotle, Plato, and the Elizabethan critics; reading in Sidney, Jonson, Dryden, Addison, and the chief critics of the nineteenth century. Writing of short pieces of criticism. Professor HOWE.
First semester, T. Th., at 9:00.*
59. Social Forces in English Literature. A study of the most important English writers with the purpose of discovering the social ideas of the authors and their times. Professor HOWE.
Second semester, T. Th., at 9:00.
60. Composition Seminary. A course in writing restricted to those who have passed English 15 with distinction. Professor SEMBOWER.
First and Second semesters, T. Th., at 11:00.
- Dante (Fine Arts 7). Lectures, accompanied by reading of English translation. Professor BROOKS.
First and Second semesters, T. Th., at 11:00.
61. American Literature. Special studies in American writers. Professor SEMBOWER.
Second semester, M. W. F., at 11:00.
English 6 is a prerequisite for this course.

DEPARTMENT OF HISTORY

JAMES A. WOODBURN, Professor of American History.
SAMUEL B. HARDING, Professor of European History.
ALBERT L. KOHLMEIER, Assistant Professor of History.
JAMES G. McDONALD, Assistant Professor of History.
LOGAN ESAREY, Instructor in Western History.

The Department is prepared for research work leading to the A.M. and Ph.D. degrees in the following fields: American colonial history; the American Civil War and Reconstruction, and the history of American political parties; English history in the seventeenth and nineteenth centuries; the French Revolution; American diplomatic history; the history of Indiana.

Candidates for the Ph.D. degree with History as major subject will be examined in each of the following fields: (1) Ancient History, with emphasis at the option of the candidate on either Greek or Roman history; (2) Medieval and Modern History, with emphasis on either the medieval or the modern field; (3) English History, with emphasis either on the period before 1603 or after that date; and (4) American History, with chief emphasis either on the period before 1783, or after that date. The examination on the special field of the thesis will naturally be more searching than elsewhere.

Following are the courses open to graduate students in this Department:

6. English History to 1603. Professor HARDING.
First and Second semesters, M. W. F., at 9:00.
7. English History since 1603. Professor HARDING.
First and Second semesters, M. W. F., at 9:00.]
Omitted in 1916-17.
8. American Colonial History. Assistant Professor KOHLMEIER.
First and Second semesters, T. Th., at 8:00.
9. Renaissance and Reformation (1300-1555). Professor HARDING.
First and Second semesters, T. Th., at 11:00.
10. History of Modern Europe. From about 1750 to the present time.
Assistant Professor KOHLMEIER.
First and Second semesters, M. W. F., at 11:00.
11. Greek History: Advanced Course.
First and Second semesters, at an hour to be appointed 1
Omitted in 1916-17.

13. France in the Middle Ages. A study of the institutions of medieval France, and of the processes whereby the feudal type of government was transformed into the modern state. Lectures, collateral readings, and reports on assigned topics. Professor HARDING.
First and Second semesters, T. Th., at 2:00.
Ability to read French is a prerequisite.
16. Historical Method. Professor HARDING.
First semester, T. Th., at 2:00.
17. Historians and History Writing in the Nineteenth Century. Professors HARDING and WOODBURN.
Second semester, T. Th., at 2:00.
22. American Diplomatic History, 1776-1914. Assistant Professor KOHLMEIER.
First and Second semesters, T. Th., at 3:00.
- 28a. Origin and Growth of the American Constitution. Professor WOODBURN.
First semester, M. W. F., at 9:00.
- 28b. Causes and Results of the Civil War in America. Professor WOODBURN.
Second semester, M. W. F., at 9:00.
30. Development of the American West. Dr. ESAREY.
First and Second semesters, M. W. F., at 8:00.
- 20A. Seminary in English History. Individual research and conferences.
Professor HARDING.
First and Second semesters, W., 4:00 to 5:30.
- 20B. Seminary in Modern European History. Individual research and conferences. Assistant Professor McDONALD.
First and Second semesters, W., 4:00 to 5:30.
- 20C. Seminary in American History: American Parties, 1828-1850. Individual research and conferences. Professor WOODBURN.
First and Second semesters, M., 4:00 to 5:30.
- 20D. Seminary in Indiana History. In 1916-17 the period from 1850 to 1860 will be studied. The University library contains numerous files of papers covering this period and a large number of pamphlets and memoirs. Topics will be studied intensively and theses prepared. All seminary papers in this course must be type-written and ready to print. Full bibliographies are required. Professor WOODBURN and Dr. ESAREY.
First and Second semesters, at hours to be arranged.
40. The Editing and Printing of Papers and Monographs. A practical course without University credit. Professor HARDING.
First semester, M., at 7:00 p.m.
Intended primarily for graduate students of History, but open to students of other departments.

DEPARTMENT OF POLITICAL SCIENCE

AMOS S. HERSHY, Professor of Political Science and International Law.

FRANK G. BATES, Associate Professor of Political Science.

JOHN A. LAPP, Lecturer on Social Legislation.

ERNEST M. LINTON, Instructor in Political Science

The following courses are open to graduate students in this Department:

5. Municipal Government. Associate Professor BATES.
First semester, M. W. F., at 10:00.
6. The American Party System. Professor HERSHY.
Second semester, M. W. F., at 10:00.
7. Principles of Legislation. Associate Professor BATES and Mr. LAPP.
First semester, M. W. F., at 9:00.
Given in alternate years with Course 8.
8. Principles of Administration. Associate Professor BATES.
First semester, M. W. F., at 9:00.
Given in alternate years with Course 7.]
Omitted in 1916-17. May be expected in 1917-18.
9. Social Polities. Associate Professor BATES.
Second semester, M. W. F., at 9:00.
11. Political Theory. Dr. LINTON.
First and Second semesters, T. Th., at 11:00.
13. International Relations. Professor HERSHY.
First and Second semesters, M. W. F., at 11:00.
15. Public International Law. Professor HERSHY.
First and Second semesters, T. Th., at 1:00.
16. Training for Public Service. Associate Professor BATES and Mr. LAPP.
First and Second semesters. Hours and credit by arrangement.
21. Seminary: Practical Problems of Government. Preliminary work in the discovery and use of sources, followed by individual work in research in practical questions; e.g. administration of public charities; the office of public prosecutor, and administrative functions of the courts. Associate Professor BATES.
First and Second semesters. Hours and credit by arrangement.
22. Seminary in International Law and Diplomacy. Individual research work. The study of important topics in international law and international relations, as for example, the Moroccan question; Belgian neutrality; the relations between China and Japan. Professor HERSHY.
First and Second semesters. At hours to be appointed.

DEPARTMENT OF ECONOMICS AND SOCIOLOGY

ULYSES G. WEATHERLY, Professor of Economics and Sociology.

WILLIAM A. RAWLES, Professor of Political Economy.

FRANK T STOCKTON, Assistant Professor of Economics and Sociology.

Following are the courses open to graduate students in the Department:

- 3a. Public Finance. Assistant Professor STOCKTON.
First semester, M. W. F., at 8:00.
- 3b. Special Tax Problems. Assistant Professor STOCKTON.
Second semester, M. W. F., at 8:00.
- 9. Transportation. Professor RAWLES.
Second semester, M. W. F., at 9:00.
- 28. Insurance. Professor RAWLES.
Second semester, T. Th., at 9:00.
- 16. Tariff History of the United States. Professor ———.
Summer session, daily, at 10:00.
- 5. History of Economic Thought. Assistant Professor STOCKTON.
First semester, M. W. F., at 11:00.
- 12. Labor Organization. Assistant Professor STOCKTON.
Second semester, M. W. F., at 11:00.
- 20a. Descriptive Sociology: Social Evolution. Professor WEATHERLY.
First semester, T. Th., at 10:00.
- 20b. Descriptive Sociology: Social Assimilation. Professor WEATHERLY.
Second semester, T. Th., at 10:00.
- 4a. Social Pathology: Poverty and Charities. Professor WEATHERLY.
First semester, M. W. F., at 10:00.
- 4b. Social Pathology: Crime and Penology. Professor WEATHERLY.
Second semester, M. W. F., at 10:00.
- 10a. Socialism. Professor WEATHERLY.
First semester, T. Th., at 11:00.
- 10b. Methods of Social Reform. Professor WEATHERLY.
Second semester, T. Th., at 11:00.
- 7a. Principles of Sociology: Social Forces. Professor WEATHERLY.
First semester, M. W. F., at 11:00.
- 7b. Principles of Sociology: Social Efficiency. Professor WEATHERLY.
Second semester, M. W. F., at 11:00.
- 30. Graduate Seminary. Individual research of an advanced character.
Professor WEATHERLY.
First and Second semesters, T., at 2:00.
Open only to graduates or students who have done two semesters' work in Course 8 (see bulletin of the College of Liberal Arts).

DEPARTMENT OF JOURNALISM

JOSEPH W. PIERCY, Professor.

JOSEPH A. WRIGHT, Assistant Professor.

To students who have taken twenty hours of Journalism as a minor with a major subject in either English, History, Political Science, Philosophy, or Economics, the Department offers one year of graduate work leading to the degree A.M. At least sixteen hours of work in Journalism are required, the other fourteen hours to be arranged for in consultation with the head of the Department. It is contemplated that a thesis shall be an important part of the year's work, and shall receive five hours of credit out of the sixteen. The subject of the thesis will deal either with some phase or field of country journalism, or with some special work in city journalism, the specialization being related, if deemed best, to the student's major subject when an undergraduate.

2. Practical Work on *The Daily Student*. Editorial work exclusively.
Three hours' credit. Assistant Professor WRIGHT.
First and Second semesters, daily, at hours to be arranged.
7. Current Events and Editorial Writing. Professor PIERCY.
First and Second semesters, T. Th., at 4:00.
11. Newspaper Feature and Magazine Writing. Professor PIERCY.
First and Second semesters, T., 3:00 to 4:50.
20. Seminary. Professor PIERCY.
First and Second semesters. Consultation hours to be arranged.

DEPARTMENT OF PHILOSOPHY

ERNEST H. LINDLEY, Professor of Philosophy and Psychology.

WILLIAM L. BRYAN, Lecturer on Ethics.

WILLIAM B. ELKIN, Acting Professor of Philosophy.

*MELVIN E. HAGGERTY, Associate Professor of Psychology, and Director of the Psychological Laboratory.

[In 1915-16 Dr. JOHN W. TODD was Acting Professor of Educational Psychology and Director of the Psychological Laboratory during Professor HAGGERTY's absence.]

Following are the courses open to graduate students in the Department:

35. Modern Idealism. Acting Professor ELKIN.
First and Second semesters, T. Th., at 10:00.

*Resigned, February 15, 1916.

- [36. Advanced Logic and Methods of Science. Acting Professor ELKIN.
First semester, two hours once a week, at a period to be arranged.]
Omitted in 1916-17.
5. Advanced Psychology. Professor LINDLEY or Acting Professor ELKIN.
Second semester, at hours to be arranged.
- [7. Comparative Psychology.
First semester, M. W. F., at 11:00.]
Omitted in 1916-17. .
30. Seminary in Applied Psychology. Professor LINDLEY.
First and Second semesters, two hours a week.
34. Psychological Seminary. Professor LINDLEY.
First and Second semesters, two hours a week.
8. Psychological Research. Work arranged with individual students.
Professor LINDLEY.
First and Second semesters, at hours to be arranged.

DEPARTMENT OF FINE ARTS

ALFRED M. BROOKS, Professor.
ROBERT E. BURKE, Assistant Professor.

The following courses in the Department of Fine Arts may count as graduate work on the Master's degree. For a full description see the bulletin of the College of Liberal Arts, or under the heading Liberal Arts in the University Catalog.

1. Engraving and Etching. Professor BROOKS.
First and Second semesters, M. W. F., at 10:00.
- 2a. History of Ancient Architecture. Professor BROOKS.
First semester, daily, at 9:00.
- 2b. History of Medieval Architecture. Professor BROOKS.
Second semester, daily, at 9:00.
- 3a. Sculpture. Professor BROOKS.
First semester, T. Th., at 10:00.
- 3b. Sculpture. Professor BROOKS.
Second semester, T. Th., at 10:00.
7. Dante. Professor BROOKS.
First and Second semesters, T. Th., at 11:00.
10. Nineteenth Century Art Criticism. Assistant Professor BURKE.
First and Second semesters, one evening a week.

DEPARTMENT OF MATHEMATICS

SCHUYLER C. DAVISSON, Professor.

DAVID A. ROTHROCK, Professor.

ULYSSES S. HANNA, Associate Professor.

KENNETH P. WILLIAMS, Assistant Professor.

The graduate courses at present offered by the Department lead to the A.M. and Ph.D. degrees.

A student wishing to secure the Doctor's degree with Mathematics as major subject must, early in his graduate career, designate one of the following main divisions of Mathematics as his specially chosen field: (1) Arithmetic and Algebra; (2) Calculus and Theory of Functions; (3) Geometry; (4) Applied Mathematics. In his specially chosen field, the candidate must present an acceptable thesis, showing an original treatment and giving evidence of original research, and be examined in three of the fields enumerated above.

The library of the Department, consisting of about 2,500 bound volumes, is located in Room 36, Wylie Hall. The library is open from 8:00 a.m. to 10:00 p.m., for use by students pursuing advanced work in Mathematics.

Following are the courses open to graduate students in the Department:

21. Theory of Functions. Professor ROTHROCK.
First and Second semesters, two hours a week.

- [39. Theory of Groups of Substitutions. Associate Professor HANNA.
First and Second semesters, two hours a week.]
Omitted 1916-17.

- [30. Differential Geometry. Professor DAVISSON.
First and Second semesters, three hours a week.]
Omitted in 1916-17.

32. Theory of Numbers. Associate Professor HANNA.
First semester, two hours a week.

- [31. Encyclopedia of Elementary Mathematics. Professor ROTHROCK.
First semester, three hours per week.
Open also to undergraduates.]
Omitted in 1916-17.

- [44. Non-Euclidean Geometry. Professor DAVISSON.
Open also to undergraduates.]
Omitted in 1916-17.

- [56. Point Sets and Functions of a Real Variable. Assistant Professor WILLIAMS.
First and Second semesters, two hours.]
Omitted in 1916-17.
- [57. Mathematical Analysis. Assistant Professor WILLIAMS.
First and Second semesters, three hours per week.]
Omitted in 1916-17.
26. Projective Geometry. Professor DAVISSON.
First and Second semesters, two hours per week.
Open also to undergraduates.
34. Higher Algebra. Assistant Professor WILLIAMS.
First and Second semesters, three hours per week.
20. Mathematical Reading and Research. Professors DAVISSON and
ROTHROCK, Associate Professor HANNA, and Assistant Professor
WILLIAMS.
Hours and credit to be arranged.
- [45. Calculus of Variations. Professor ROTHROCK.
First and Second semesters, three hours per week.]
Omitted in 1916-17.

DEPARTMENT OF ASTRONOMY

WILBUR A. COGSHALL, Associate Professor of Astronomy.

Graduate work in this Department is partially provided for by the Lawrence Fellowship in Astronomy, mentioned under that heading in this bulletin. Other work of a graduate nature carried on at the University is included under the courses described below.

For a description of Kirkwood Observatory and its equipment see University Catalog, or bulletin of the College of Liberal Arts.

14. Orbits of Spectroscopic Binaries. Associate Professor COGSHALL.
Second semester, the day and hours to be appointed.
13. Astronomical Research. A limited number of students will be permitted to undertake research work under the supervision of the Department. The equipment is best suited for work in astronomy of precision and celestial photography. Associate Professor COGSHALL.
First and Second semesters, hours and credit arranged with each student.

DEPARTMENT OF PHYSICS

ARTHUR L. FOLEY, Professor.
ROLLA R. RAMSEY, Associate Professor.
JOHN B. DUTCHER, Associate Professor.
FRED A. MOLBY, Assistant Professor.

The graduate courses offered by the Department lead to the A.M. and Ph.D. degrees.

The courses comprising the work of the first three years (thirty hours) in Physics, also courses in photography, general laboratory work, the teaching of physics and physical manipulation, modern physics, and analytical mechanics (altogether forty-two hours), will be found listed in the bulletin of the College of Liberal Arts, or in the University Catalog. The following courses are open to graduate students, and to such undergraduates as may be prepared to take them:

16. Spectroscopy. Advanced course. Associate Professor RAMSEY.
First and Second semesters, T. Th., at 2:00.
18. Applied Electricity and Dynamo-Electric Machinery. Combined text and laboratory course. Associate Professor RAMSEY.
First semester, M. W. F., at 1:00.
20. Electric Waves. A combined text and laboratory course. Associate Professor DUTCHER.
Second semester, T. Th., at 2:00.
22. The Conduction of Electricity thru Gases, Radio-activity, Electron Theory. Combined text and laboratory course. Associate Professor RAMSEY.
Second semester, M. W. F., at 2:00.
29. Differential Equations in Physics. Application of mathematics to physical theories. Associate Professor RAMSEY.
First semester, M. W. F., at 8:00.
31. Thermodynamics. Assistant Professor MOLBY.
First semester, T. Th., at 8:00.
33. Physical Optics. Associate Professor DUTCHER.
First and Second semesters, T. Th., at 9:00.
35. Advanced Mathematical Electricity. Associate Professor RAMSEY.
First and Second semesters, T. Th., at 9:00.
37. Current Physical Literature. Professor FOLEY.
First and Second semesters, T. Th., at 10:00.

39. Advanced Theoretical Physics. A critical study of standard treatises and memoirs. Professor FOLEY and Associate Professor RAMSEY. First and Second semesters, T. Th., at 11:00.
40. Advanced Laboratory Methods and Research. Professor FOLEY and Associate Professor RAMSEY. First and Second semesters, at hours to be appointed.

DEPARTMENT OF CHEMISTRY

ROBERT E. LYONS, Professor.

LOUIS S. DAVIS, Professor.

*OLIVER W. BROWN, Associate Professor.

FRANK C. MATHERS, Associate Professor.

CLARENCE E. MAY, Associate Professor.

[In 1915-16 GEORGE C. HALE was Instructor, and had charge of Professor BROWN'S work.]

Special attention is given to inorganic, organic, physiological, and physical chemistry and to electrochemistry, technical analytical chemistry, and electrometallurgy.

The graduate work of the Department, leading to the A.M. and Ph.D. degrees, comprises advanced laboratory, lecture, library, and seminary work in the lines indicated above, and special graduate courses described below. A thesis embodying original investigation is required for an advanced degree.

The laboratories for advanced work and the departmental library are open from 8:00 a.m. to 4:50 p.m. There are no classes in the laboratories; each student works independently.

19. Physical Chemistry. Laboratory work. Associate Professor BROWN. First and Second semesters, at hours to be appointed. Laboratory open daily, 8:00 to 4:50.
22. Electrochemistry. Associate Professor BROWN and Mr. _____. Second semester, lectures (A), M. W., at 8:00; laboratory (B), T. Th. F., 1:00 to 4:50.
15. Advanced Technical and Engineering Analysis. Laboratory work. Associate Professor MATHERS. Second semester, at hours to be arranged. Laboratory open daily, 8:00 to 4:50.
32. Gas and Fuel Analysis. Two-hour course. Lectures and laboratory work. Associate Professor MATHERS. Second semester, lectures (A), T., at 1:00; laboratory work (B), at hours to be appointed.

*Absent on leave from August 1, 1915, to August 1, 1916.

33. Spectrum Analysis and Sugar Analysis. Two-hour course. Lectures and laboratory work. Associate Professor MATHERS.
First semester, first thirteen weeks, lectures (*A*), F., at 1:00; laboratory work (*B*), at hours to be appointed.
26. Chemical Engineering. Lectures and reports. Three-hour course. Associate Professor BROWN.
First semester, lectures and reports, M. W. F., at 11:00. Credit, three hours.
14. Seminary. Reports on current literature and special topics. (1) Inorganic Chemistry. Associate Professor MATHERS. (2) Organic Chemistry. Professor LYONS and Associate Professor MAY. (3) Electrochemistry and Industrial Chemistry. Associate Professor BROWN.
First and Second semesters, Th., at 7:00 p.m.
50. Research: Organic or Physiological Chemistry. Professor LYONS or Associate Professor MAY.
First and Second semesters, daily, 8:00 to 4:50.
51. Research: Chemistry of the Alkaloids. Professor DAVIS.
First and Second semesters, daily, 8:00 to 4:50.
52. Research: Electrochemistry, Electrometallurgy, and Physical Chemistry. Associate Professor BROWN.
First and Second semesters, daily, 8:00 to 4:50.
53. Research: Inorganic Chemistry. Associate Professor MATHERS.
First and Second semesters, daily, 8:00 to 4:50.
24. Advanced Electrochemistry and Electrometallurgy. (*A*) Lectures on the design and operation of commercial electric furnaces and on electric furnace processes and products. (*B*) Advanced laboratory work and research in pure and applied electrochemistry and electrometallurgy, including investigations in electric furnace work, refining and extraction of metals, electrosynthesis of organic and inorganic compounds, manufacture of storage batteries, and of industrial electrochemical processes. Associate Professor BROWN.
First and Second semesters, laboratory open daily, 8:00 to 4:50; lectures, at hours to be appointed.
Students in this course are recommended to take Physics 18.
25. Advanced Organic Chemistry. A continuation of Course 6. (*A*) Lectures and recitations on selected chapters of organic chemistry. (*B*) Laboratory work or research in synthetic or analytical organic chemistry. Associate Professor MAY.
First semester, lectures (*A*), T. Th., at 11:00; First and Second semesters, laboratory (*B*), at hours to be appointed.
Presupposes Courses 6 and 7.
13. Elementary Metallurgy and Assaying. Three-hour course. Associate Professor BROWN and Mr. _____.
First semester, lectures (*A*), M. W., at 8:00; laboratory open, F., 8:00 to 4:50.

29. Storage Batteries. Associate Professor BROWN.
First semester, lectures, F., at 8:00; laboratory work one or more periods per week.
31. Advanced Inorganic Chemistry. Laboratory work. The preparation and study of the properties and reactions of the different compounds of the rare and uncommon elements, followed by research. This includes a review of the literature relating to the element that is being studied. Associate Professor MATHERS.
First and Second semesters, laboratory open daily, 8:00 to 4:50.
Hours to be arranged.

DEPARTMENT OF GEOLOGY

EDGAR R. CUMINGS, Professor.

JOSHUA W. BEEDE, Associate Professor.

JESSE J. GALLOWAY, Instructor.

The Department of Geology offers work leading to the A.M. and Ph.D. degrees. Opportunity is afforded for advanced work and investigation in stratigraphic geology and paleontology, and in economic and geographic geology.

Following are the courses open to graduate students in the Department:

3. Economic Geology. A discussion of the non-metallic materials, such as clay, cement, coal, oil and gas, building stones, etc. Associate Professor BEEDE.
Second semester, daily, at 8:00.
5. Systematic Paleontology. Laboratory study of fossil invertebrates. Dr. GALLOWAY.
First and Second semesters, two to five hours, at times to be arranged.
4. Evolution. A study of the geologic factors in evolution; the origin of the oldest faunas; age of the earth, etc. Professor CUMINGS.
Second semester, T. Th., at an hour to be appointed.
10. Research. Investigation of geological and paleontological problems. A careful report on each investigation is required, in proper form for publication. Professor CUMINGS, Associate Professor BEEDE, Dr. GALLOWAY.
First and Second semesters, daily, 9:00 to 4:50.
13. Advanced Field Work. Continuous work in the field for a month or more in the summer, fall, or spring. This course will usually form part of the research work submitted for an advanced degree. The work must be largely independent, but will always be under the general oversight of a member of the Department.

14. Stratigraphic Geology. A study of the literature of the various geologic systems. The history of their investigation, and the present knowledge of their divisions, distribution, faunas, and paleogeography will be fully considered. Professor CUMINGS. First and Second semesters, lectures, M. F., at 9:00.

DEPARTMENT OF BOTANY

DAVID M. MOTTIER, Professor.

FRANK M. ANDREWS, Associate Professor.

JAMES M. VAN HOOK, Assistant Professor.

Following are the courses open to graduate students in the Department:

4. Morphology of Fungi. Assistant Professor VAN HOOK.
First and Second semesters, daily, 1:00 to 2:50.
5. Physiology. Associate Professor ANDREWS.
First and Second semesters, daily.
6. Cytology. Professor MOTTIER.
First and Second semesters, daily.
- 5A. Research in Physiology. Special studies will be offered to those pursuing work for advanced degrees. Associate Professor ANDREWS.
First and Second semesters, daily.
7. Research in Morphology and Cytology. Problems for special investigation in morphology and cytology will be assigned to students who are prepared to undertake original work. Ability to read French and German is assumed. Professor MOTTIER.
First and Second semesters, daily.
13. Morphology of the Algae. A study of the life history and of the development of vegetative and reproductive organs in certain algae. The work is confined very largely to fresh-water forms. Professor MOTTIER.
First and Second semesters, daily.
18. Investigations in Mycology and Plant Pathology. Assistant Professor VAN HOOK.
First and Second semesters, daily, 1:00 to 2:50.

DEPARTMENT OF ZOOLOGY

CARL H. EIGENMANN, Professor, and Director of the Biological Station.
FERNANDUS PAYNE, Associate Professor.

WILL SCOTT, Assistant Professor.

MILDRED A. HOGE, Instructor.

All work of the Department during the summer is done at the Biological Station, Winona Lake, Indiana.

Following are the courses open to graduate students in the Department:

30. Advanced Zoölogy. Professor EIGENMANN, Associate Professor PAYNE, Assistant Professor SCOTT, and Dr. HOGE. First and Second semesters, daily, 8:00 to 3:50.
31. General Biological Problems. Professor EIGENMANN. Second semester, M. W. F., at 9:00.
32. Genetics. Dr. HOGE. Second semester, Th., at 9:00.
50. Seminary. Weekly meetings of advanced students and instructors to discuss current literature and report on investigations in progress. Associate Professor PAYNE. First and Second semesters, M., at 4:00.
60. Research. Special investigation of zoölogical problems with a report on each investigation. Subjects of immediate interest in the Department are faunal and systematic studies of fresh-water fishes, cytology, limnology, and experimental zoölogy. Professor EIGENMANN, Associate Professor PAYNE, Assistant Professor SCOTT, and Dr. HOGE.

DEPARTMENT OF ANATOMY

BURTON D. MYERS, Professor.

JACOB A. BADERTSCHER, Assistant Professor.

Following are the courses open to graduate students in the Department:

13. Research Work. Opportunity for research work is offered to advanced students who may have at least one-half their time for one year free for the work. Professor MYERS, and Assistant Professor BADERTSCHER. First and Second semesters, at hours to be appointed.
15. Advanced Course in Anatomy. Open to students who have completed the dissection of the human body and Course 8. Professor MYERS and Assistant Professor BADERTSCHER. First and Second semesters, at hours to be appointed.

DEPARTMENT OF PHYSIOLOGY

WILLIAM J. MOENKHAUS, Professor.
CLARENCE E. EDMONDSON, Instructor.

Facilities for research leading to the higher degrees are available within restricted lines in general physiology.

Following are the courses open to graduate students in the Department:

6. Advanced Physiology. A comprehensive experimental study of some restricted phase of mammalian physiology or of general physiology. Laboratory work and assigned reading. Professor MOENKHAUS and DR. EDMONDSON.
First and Second semesters, daily, at hours to be arranged.
Open to students who have passed in Courses 1 and 3, or in Courses 4 and 5.
10. Research. Problem work in certain phases of general physiology.
Professor MOENKHAUS.
First and Second semesters, daily, 8:00 to 3:50.
Open only to advanced students.
11. Seminary. Professor MOENKHAUS.
First and Second semesters, at hours to be arranged.

School of Education

WILLIAM W. BLACK, Dean, and Professor of Elementary Education.
*HENRY LESTER SMITH, Dean-elect, and Professor of School Administration.
†WILLIAM F. BOOK, Professor of Educational Psychology.
ROBERT J. LEONARD, Professor of Vocational Education.
JOHN W. TODD, Acting Professor of Educational Psychology.
HUBERT G. CHILDS, Associate Professor of Secondary Education.
‡MELVIN E. HAGGERTY, Associate Professor of Educational Psychology.
WILLIAM A. MYERS, Lecturer on School Administration.

Graduate work is offered in the School of Education, and special programs leading to the A.M. and Ph.D. degrees, with the Master's and Doctor's certificates in Education, will be arranged on application.

A student whose undergraduate major was in the College of Liberal Arts will usually be given opportunity to do in one year the work for the A.M. degree in Education. The work will include such undergraduate courses in Education as may be necessary as a basis for the graduate work.

The courses of the summer sessions are so arranged that graduate students in Education may complete the work for the Master's degree in summer sessions.

Graduate students in Education may, by special arrangement, complete the work for two-thirds of a semester in the Summer session of 1916 by remaining until August 25.

COURSES IN EDUCATION

Following are the courses open to graduate students in the School:

6. History of Education. Associate Professor CHILDS.
First and Second semesters, T. Th., at 8:00.
10. Philosophy of Education. Professor BLACK.
First and Second semesters, M. W. F., at 8:00.
11. Principles of Organization and Supervision. Professor BLACK.
First and Second semesters, T. Th., at 10:00.

*Dean Black, who for the past four years has been in charge of the school, has resigned his administrative duties and henceforth will give his whole time to work of research and instruction. Professor Smith, formerly Superintendent of the Bloomington schools and Professor of School Administration in the University, and more recently Assistant Superintendent of the Minneapolis (Minn.) schools, becomes Dean of the School with the opening of the academic year, 1916-17.

†Absent on leave during the year 1915-16.

‡Resigned, February 15, 1916.

15. School Administration. Mr. MYERS.
First and Second semesters, T. Th., 7:00 to 8:15 p.m.
16. Experimental Psychology. Acting Professor TODD.
Second semester, M. W. F., 1:00 to 3:50.
- 17a. Mental Development. Given in conjunction with Philosophy 33.
Acting Professor TODD.
First semester, M. W. F., at 11:00..
- 17b. Psychology of Learning and of Work. Given in conjunction with Philosophy 40. Acting Professor TODD.
Second semester, M. W. F., at 11:00.
9. Orthogenies. Acting Professor TODD.
First and Second semesters, at hours to be arranged.
19. Rural Education. Professor BLACK.
First semester, M. W. F., at 9:00.
20. The Theory and Administration of Vocational Education. Professor LEONARD.
First and Second semesters, M. W. F., at 8:00.
21. Vocational Guidance. Professor LEONARD.
First and Second semesters, T. Th., at 8:00.
22. Occupational Surveys. Professor LEONARD.
First and Second semesters, M. W. F., at 9:00.
- 16B. Seminary in School Administration.
First semester, T., at 4:00.
- 16C. Seminary in Elementary Education. Professor BLACK.
First semester, M., at 7:00 p.m.
- 16D. Seminary in Secondary Education. Associate Professor CHILDS.
First semester, T., at 7:00 p.m.
18. Research in Education. Given during the First and Second semesters.
 - 18B. Research in School Administration.
 - 18C. Research in Elementary Education. Professor BLACK.
 - 18D. Research in Secondary Education. Associate Professor CHILDS.
- 18E. Research in Educational Psychology. Acting Professor TODD.
- 18F. Research in Vocational Education. Professor LEONARD.

DEPARTMENT OF HOME ECONOMICS

MABEL T. WELLMAN, Associate Professor.

ELIZABETH SAGE, Assistant Professor.

FRANCES L. SWAIN, Assistant Professor.

To carry graduate work in this Department, students must have completed the equivalent of twenty hours of work in this subject, or must make up the deficiency. The character of the advanced work may be varied according to the needs of the student and may deal with the scientific, the economic, the sociological, or the artistic aspects of the subject.

Following are the courses open to graduate students in the Department:

4. Applied Design. Assistant Professor SAGE.

First semester, T. Th., 8:00 to 9:50; repeated in Second semester, T. Th., 1:00 to 2:50.

5. History of Costume and Costume Design. Assistant Professor SAGE.

First semester, daily, 10:00 to 11:50.

- 14a. Dietetics and Food Chemistry. Associate Professor WELLMAN.

First semester, M. W. F., 8:00 to 9:50.

- 14b. Dietetics and Food Chemistry. Associate Professor WELLMAN.

Second semester, M. W. F., 8:00 to 9:50.

- 16a. Foods III. Assistant Professor SWAIN.

First semester, T. Th., 1:00 to 2:50.

Open to students who have completed Course 14.

- 16b. Foods III. Assistant Professor SWAIN.

Second semester, T. Th., 1:00 to 2:50.

25. Evolution of the Home. Historic development of the home; the family as a social institution; the house as an expression of family needs; a study of the modern family. Associate Professor WELLMAN.

First and Second semesters, M. W. F., at 10:00.

26. Economics of the Family. Division of income; a study of the factors in the cost of living; family budgets. Assistant Professor SWAIN.

First and Second semesters, T. Th., at 9:00.

27. Research. Special problems.

First and Second semesters, at hours to be arranged.

28. Seminary.

First and Second semesters, at hours to be arranged.

Students Registered in the Graduate School, 1915-16

**The following list includes all graduate students who were in attendance in the Summer session of 1915, and the First and Second semesters of 1915-16. These sessions are indicated by "S", "1", "2", respectively. A star prefixed to the year of graduation indicates that the student completed his A.B. work at the end of the First semester and was enrolled in the Graduate School at the beginning of the Second semester, altho the A.B. diploma will not be conferred until the Commencement of 1916.

Anderson, Fred Norman (s)	<i>History</i>	French Lick.
A.B., Indiana University, 1913; A.M., 1915.		
Anderson, Jean Juessen (1)	<i>German</i>	Bloomington.
A.B., Indiana University, 1911.		
Atkinson, Dayton Clifford (s)	<i>Physics</i>	Bloomington.
A.B., Indiana University, 1915.		
Atkinson (Mrs.) Zella Wiseman (s)	<i>English</i>	Bloomington.
A.B., Indiana University, 1909; A.M., 1912.		
Baker, John Lewis (2)	<i>Economics</i>	Bloomington.
A.B., Miami University, 1904; LL.B., Indiana University, 1910.		
Baker, Charles Ike (2)	<i>Economics</i>	Troy.
A.B., Indiana University, 1914.		
Ballinger, Jessie Flae (s)	<i>Botany</i>	Upland.
A.B., Indiana University, 1913.		
Barbour, Helen (1)	<i>Home Economics</i> . .	Bloomington.
A.B., Indiana University, 1914.		
Barnes, Arlie Ray (1,2)	<i>Anatomy</i>	Paris Crossing.
A.B., Indiana University, 1915.		
Barr, Arvil Sylvester (s)	<i>History</i>	Bloomington.
A.B., Indiana University, 1915; A.M., 1915.		
Bays, John Andrew (s)	<i>Education</i>	Rockport.
A.B., Wabash College, 1908.		
Beebe, Ralph Edwin (s,1,2)	<i>English</i>	Warsaw.
A.B., Winona College, 1913.		
Bartley, Helen Fay (1)	<i>English</i>	Oaktown.
A.B., Indiana University, 1914.		
Bell, (Mrs.) Gertrude Sumption (2) . .	<i>Philosophy</i>	Bloomington.
A.B., Indiana University, *1916.		
Bennett, Orval (s)	<i>Political Science</i> . .	Marion.
A.B., Indiana University, 1915.		
Bentley (Mrs.) Bonnie Morbley (2) . .	<i>History</i>	New Albany.
A.B., Indiana University, *1916.		
Bergdoll, Mary (s)	<i>English</i>	Bloomington.
A.B., Indiana University, 1914.		
Bittner (Mrs.) Adela Wohler (1,2) . .	<i>Sociology</i>	Bloomington.
A.B., Rockford College, 1907.		
Blank, Ralph John (1,2)	<i>History</i>	West Newton.
A.B., Indiana University, 1915.		
Blew, Michael James (s,1,2)	<i>Chemistry</i>	Wabash.
A.B., Indiana University, 1915.		

- Blue, Thomas Grover (1,2) *Chemistry* Carmi, Ill.
A.B., Indiana University, 1915.
- Bohannon, William Everett (1,2) *Education* Bloomington.
B.S., Southern Normal College, 1904; A.B., Indiana University, 1915.
- Booth, Charles Edward (1,2) *Education* Valparaiso.
A.B., Valparaiso University, 1914; B.S., 1915.
- Brand, Carl Fremont (s,1,2) *History* Greenfield.
A.B., Indiana University, 1915.
- Brengle, Fred Ernest (1) *History* Ellettsville.
A.B., Central Normal College, 1914.
- Bryan, Maude Esther (1) *Latin* Bloomington.
A.B., Indiana University, 1914.
- Buley, Roseoe Carlyle (1) *History* Bloomington.
A.B., Indiana University, 1914.
- Burke, Artie Eden (s) *History* Bloomington.
A.B., Indiana University, 1914.
- Burton, Edith L (1,2) *Latin* Sanborn.
A.B., Western College for Women, 1911.
- Buskirk, Allen Van (2) *English* Bloomington.
A.B., Indiana University, 1915.
- Carlock, Royal Hubert (1) *Economics* Paris Crossing.
A.B., Indiana University, 1915.
- Camble, Christopher Columbus (s) *Education* Clayton.
A.B., Indiana University, 1910.
- Carrick, Leo Lehr (s) *Chemistry* Bloomington.
M.S., Valparaiso University, 1911.
A.M., Indiana University, 1915.
- Cassell, Lucile Helen (s) *Home Economics*. Bloomington.
A.B., Indiana University, 1911.
- Childs, (Mrs.) Laura Goff (s,1,2) *English* Bloomington.
A.B., Indiana University, 1915.
- Cockrane, John Colbert (1,2) *History* Bloomington.
A.B., Indiana University, 1915.
- Cockrum, Barrett William (s) *Chemistry* Bloomington.
A.B., Indiana University, 1914.
- Coleman, Faith (1,2) *English* Bloomington.
A.B., Indiana University, 1915.
- Coleman, James Melville (s,1,2) *Philosophy* Bloomington.
A.M., University of Michigan, 1892.
- Colvin, Ruth (1,2) *Botany* Flora.
A.B., Indiana University, 1914.
- Cowan, James Maxwell (1,2) *English* Dickson, Tenn.
A.B., Vanderbilt University, 1914.
- Cook, Charles Edmund (s) *Education* Bloomington.
A.B., Indiana University, 1913.
- Coryell, Horace Noble (1,2) *Geology* Bloomington.
A.B., Indiana University, 1914; A.M., 1915.
- Conrad, William Atlee (s) *Astronomy* Decatur.
A.B., Indiana University, 1915.
- Crampton, Charles J (s,1) *Philosophy* Bloomington.
A.B., Indiana University, 1914.
- Cromwell, Ray Riseley (s) *Education* Clay City.
A.B., Indiana University, 1912.

- Davidson, Samuel Frank (1,2) *English* Coatesville.
 A.B., Indiana University, 1913.
- Davis, Edgar Clarence (1,2) *Anatomy* Salem.
 A.B., Indiana University, 1915.
- Day, Elbert Eldon (s) *Education* Bunker Hill.
 A.B., Indiana University, 1910.
- Dickey, Anna (s) *History* West Baden.
 A.B., Indiana University, 1915.
- Dilla, Geraldine Princess (2) *English* Waterloo.
 A.B., University of Michigan, 1911.
- Dostal, Bernard Francis (1,2) *Physics* Milwaukee, Wis.
 A.B., University of Wisconsin, 1914; A.M., Indiana University, 1915.
- Edmondson, (Mrs.) Edna Hatfield (1,2). *Sociology* Bloomington.
 A.B., Indiana University, 1911; A.M., 1914.
- Elfers, Edna Maud (1) *English* Rising Sun.
 A.B., Indiana University, 1915.
- Ellis, Thomas Finley (1) *Sociology* Valparaiso.
 A.B., Valparaiso University, 1914; B.S., 1912; Pg.B., 1913.
- Empson, Mattie (1,2) *Latin* Brownstown.
 A.B., Butler College, 1912.
- Foote, Helen Christine (s) *English* Indianapolis.
 A.B., Indiana University, 1912.
- Gifford, Robert Earl (s) *Education* Bloomington.
 A.B., Indiana University, 1915.
- Goldsmith, William Marion (1,2) *Zoology* Oakland City.
 A.B., Hillsdale College, 1913; B.Pe., Missouri State Normal, 1909.
 A.M., Indiana University, 1915.
- Goss, (Mrs.) Alice Diven (1,2) *German* Bloomington.
 A.B., Indiana University, 1908; A.M., 1912.
- Green, Myrtle Mae (1,2) *English* Hanover.
 A.B., Hanover College, 1907.
- Griffey, Harvey Francis (s,1,2) *Education* Bloomington.
 A.B., Indiana University, 1910.
- Grossnickle, Russell (1,2) *Mathematics* North Manchester.
 A.B., Manchester College, 1915.
- Hansford, Hazel Irene (s,1,2) *Psychology* Bloomington.
 A.B., Indiana University, 1913.
- Hale, George Clyde (s) *Chemistry* Bloomington.
 A.B., Indiana University, 1915; A.M., 1915.
- Harmon, Paul Montgomery (1,2) *Physiology* Bloomington.
 A.B., Indiana University, 1914; A.M., 1915.
- Hanna, Hubert Herschell (1) *Economics* Bloomington.
 A.B., Indiana University, 1914.
- Hart, Agnes Fay (1) *Latin* Bloomington.
 A.B., Indiana University, 1914.
- Harvey, Ruth Ada (1,2) *English* Dunreith.
 A.B., Earlham College, 1909.
- Hepburn, Samuel Benedict (1,2) *History* Bloomington.
 A.B., Indiana University, 1915.
- Hess, John Ambrose (1,2) *German* Bloomington.
 A.B., University of Kansas, 1908; A.M., 1910.

Hieger, Ruth (1,2).....	<i>Mathematics</i>	Richmond.
B.S., Earlham College, 1914.		
Hire, Charles (2).....	<i>Physics</i>	Columbia City.
A.B., Indiana University, 1915.		
Hightower, Pleasant Roscoe (2).....	<i>English</i>	Littles.
A.B., Indiana Central University, 1914.		
Hoffman, Daphne Margarita (1,2).....	<i>Romance Lang.</i>	Bloomington.
A.B., Indiana University, 1912; A.M., 1913.		
Holloway, James Blaine (s).....	<i>Education</i>	Bloomington.
A.B., Indiana University, 1915.		
Holtzman, Louise Alice (s).....	<i>English</i>	Stinesville.
A.B., Indiana University, 1907.		
Hopkins, Garf Metcalf (s,1,2).....	<i>Education</i>	Bloomington.
A.B., Indiana University, 1914.		
Hufford, Mason Edward (s,1,2).....	<i>Physics</i>	Bloomington.
A.B., Indiana University, 1911; A.M., 1912.		
Hutchinson, James Emory (2).....	<i>Zoology</i>	Norman Station.
A.B., Indiana University, *1916.		
Hutchinson, Nathaniel F (s).....	<i>Education</i>	Huntingburg.
A.B., Indiana University, 1911.		
Hutchinson, Robert Orland (s).....	<i>Physics</i>	Norman Station.
A.B., Indiana University, 1914.		
Ikerd, Helen Virginia (s).....	<i>Education</i>	Bloomington.
A.B., Indiana University, 1914.		
Keck, John Hamilton (1,2).....	<i>Geology</i>	Bloomington.
A.B., Indiana University, 1911.		
Kineaid, May Martha (2).....	<i>Romance Lang.</i> ...	Indianapolis.
A.B., Butler College, 1913; A.M., Indiana University, 1914.		
Knapp, Ethel Marjorie (1,2).....	<i>English</i>	Bloomington.
A.B., Wooster College, 1903.		
Krattie, William Francis (1).....	<i>Education</i>	Knox.
A.B., Indiana University, 1909.		
Krause, Arthur Charles (s,1,2).....	<i>Economics</i>	Michigan City.
A.B., Indiana University, 1915.		
Kroft, Margaret Ruth (2).....	<i>English</i>	Indianapolis.
A.B., Indiana University, 1915.		
Kunschik, Paul (s).....	<i>German</i>	Bloomington.
A.B., Indiana University, 1914.		
Laudeman, Walter Arthur (1,2).....	<i>Chemistry</i>	Bremen.
A.B., Indiana University, 1915.		
Laughlin, Butler (s).....	<i>Education</i>	Robinson.
A.B., Indiana University, 1914.		
Leas, James Blaine (s).....	<i>Education</i>	Eaton.
A.B., Indiana University, 1908.		
Leible, Arthur Blank (1,2).....	<i>Chemistry</i>	Indianapolis.
A.B., Indiana University, 1915.		
Line, Talitha Eleanor (s).....	<i>Zoology</i>	Marion.
A.B., Indiana University, 1914.		
Lines, Emory Earl (s).....	<i>Economics</i>	Connersville.
A.B., Indiana University, 1915.		

- Long, Arthur Theodore (s) *Education* Indianapolis.
A.B., University of Illinois, 1908.
- Lucas, Henry Stephen (1) *History* Bloomington.
A.B., Olivet College, 1913; A.M., Indiana University, 1915.
- Luce, Leonard Monroe (s) *Mathematics* McCordsville.
A.B., Indiana University, 1906.
- McCaughn, James Zwingle Alexander (s). *Education* Bloomington.
A.B., Indiana University, 1885.
- McElhinney, Robert Stewart (1,2) *English* Bloomington.
A.B., Indiana University, 1912; A.M., 1915.
- McEwan, (Mrs.) Eula Davis (s) *Geology* Earl Park.
A.B., Indiana University, 1913; A.M., 1914.
- McIntosh, Daniel C (s) *Education* Worthington.
A.B., Indiana University, 1914.
- Malott, Clyde Arnett (s,1,2) *Geology* Bloomington.
A.B., Indiana University, 1913; A.M., 1915.
- Mann, Clarence Edward (s) *Political Science* Morristown.
B.S., Central Normal College, 1909; A.B., 1914.
- Martin, Eleanor Jane (1,2) *English* Corydon.
A.B., Indiana University, 1915.
- Masters, John Volney (s) *History* Greencastle.
A.B., Indiana University, 1908.
- Maxwell, Ruth Redfern (1) *Romance Lang* Bloomington.
A.B., Indiana University, 1907; A.M., 1914.
- McCullough, Maebeth (2) *History* Williamsport.
A.B., Indiana University, *1916.
- Menk, Edgar Allen (s,1,2) *Latin* Bloomington.
A.B., Indiana University, 1907.
- Miles, Ruth (1,2) *German* Syracuse.
A.B., Butler College, 1915.
- Miller, Isaiah Leslie (1,2) *Mathematics* Bloomington.
A.B., Indiana University, 1915.
- Money, Charles H (2) *History* Bloomington.
A.B., Indiana University, *1916.
- Nickels, Harvey Michael (s) *Education* Brazil.
A.B., Indiana University, 1915.
- Nicholson, Thomas Edward (s,1,2) *Psychology* Bloomington.
A.B., Indiana University, 1915.
- Niemann, Lillian Charlotte (s) *German* Irvington.
A.B., Indiana University, 1915.
- Odell, Charles Watters (s) *Education* Lafayette.
A.B., DePauw University, 1911.
- Osborn, Clifford Haehl (s) *English* Shelbyville.
A.B., Indiana University, 1915; A.M., 1915.
- Overman, Lucinda Belle (s) *Home Economics* Bloomington.
A.B., Indiana University, 1913.
- Peek, Louise Brooks (s) *Home Economics* Washington.
A.B., DePauw University.
- Pence, Raymond Vanover (1,2) *English* Swayzee.
A.B., Indiana University, 1915.
- Peterson, Harriet Margaret (s) *English* Delphi.
A.B., Indiana University, 1915; A.M., 1915.

- Pflueger, Luther Appel (s) *German* Bloomington.
A.B., Mühlenberg College, 1906; A.M., Indiana University, 1913.
- Pierey, Joseph William (s) *English* Bloomington.
A.B., DePauw University, 1913.
- Pittenger, (Mrs.) Bess Fern Williams (2) *History* Bloomington.
A.B., Indiana University, 1914.
- Polk, Omer Eli (2) *Education* Valparaiso.
Pg.B., Valparaiso University, 1912; A.B., Indiana University, *1916.
- Prichard, Walter (s,1,2) *History* Edinburg.
A.B., Indiana University, 1914; A.M., 1915.
- Reiff, Cecil Kater (s) *Political Science* North Manchester
A.B., Indiana University, 1915.
- Rice, Emmett Ainsworth (2) *History* Spencer.
A.B., Indiana University, *1916.
- Rhorer, Melvin Hoover (1) *Economics* Bloomington.
A.B., Indiana University, 1915.
- Richard, B. Frederick (1,2) *Chemistry* Bloomington.
A.B., Indiana University, 1915.
- Rigg, Mary (s,1,2) *Home Economics* Bloomington.
A.B., Indiana University, 1915.
- Robinson, James Jaques (s) *Education* Princeton.
A.B., Indiana University, 1914.
- Rogers, Aaron Milton (s) *Chemistry* Bloomington.
A.B., Indiana University, 1915.
- Sanders, Lillie Lucile (1) *German* Orleans.
A.B., Indiana University, 1912.
- Sayers, Ephraim Vern (s) *Education* Bloomington.
A.B., Indiana University, 1914.
- Schuler, Lacee Lee (1,2) *Anatomy* Waynetown.
A.B., Indiana University, 1915.
- Scole, Sabin Le Roy (s) *Philosophy* Wakamsa.
A.B., Winona College, 1913.
- Scribner, (Mrs.) Josephine Pittman (s) . *Home Economics* Bloomington.
A.B., Indiana University, 1890.
- Shekell, Oliver Morton (s) *Education* Bloomington.
A.B., Indiana University, 1913.
- Sherrill, Binford Wilson (s) *Education* Bloomington.
A.B., Indiana University, 1912.
- Small, (Mrs.) Rose McFall (1,2) *English* Bloomington.
A.B., Indiana State Normal School, 1915.
- Smith, Carrie May (s) *German* New Albany.
A.B., Indiana University, 1915.
- Smith, Howard Clifton (s) *Political Science* Oshkosh, Wis.
A.B., Indiana University, 1913; A.M., 1914.
- Spence, Thomas Dewitt (s) *Mathematics* Switz City.
A.B., Indiana University, 1911.
- Stempel, (Mrs.) Myrtle Emmert (1,2) . *Comp. Phil.* Bloomington.
A.B., Indiana University, 1902; A.M., 1915.
- Stephens, Mabel Elizabeth (1,2) *English* Marion.
A.B., Indiana University, *1916.
- Stewart, Berney Roscoe (s) *Physics* Madison, Wis.
A.B., Indiana University, 1915.
- Stone, Calvin Perry (s,1) *Philosophy* Bryant.
B.S., Valparaiso, 1910; A.B., 1913.

- Strack, William N (1,2).....*Economics*..... Bloomington.
 A.B., Indiana University, 1915.
- Stuart, Elmer Henry (s).....*Chemistry*..... Frankfort.
 A.B., Indiana University, 1914; A.M., 1915.
- Stull, James Grant (s).....*Education*..... Bloomington.
 LL.B., Indiana University, 1901.
- Sturdevant, Earl Grover (s,1,2).....*Chemistry*..... Salem.
 A.B., Indiana University, 1915.
- Summers, Grover (1,2).....*History*..... Greentown.
 A.B., Indiana State Normal School, 1912.
- Swartz, Walter Johann (1,2)..... Chicago, Ill.
 A.B., William Jewell College, 1912; A.M., University of Chicago, 1913.
- Swindler, James Albert (s).....*Physics*..... Bloomington.
 A.B., Indiana University, 1913.
- Swinney, Claude Mathews (s,1).....*Economics*..... Bloomington.
 A.B., Indiana University, 1915.
- Tarter, Elmer Ellsworth (s).....*Education*..... Salem.
 A.B., University of Kentucky, 1913.
- Telfer, Robert Stockdale (s).....*English*..... Bloomington.
 A.B., Wesleyan University, 1913.
- Telfer, William Adams (s,2).....*English*..... Bloomington.
 A.B., Indiana University, 1910; LL.B., 1910.
- Teller, Raymond (2).....*English*..... Bloomington.
 A.B., Indiana University, 1911.
- Thompson, (Mrs.) Katherine Mathers
 (1,2).....*Education*..... Bloomington.
 A.B., Indiana University, 1910.
- Toelle, Howard (s).....*History*..... Elnora.
 A.B., Indiana University, 1913.
- Thompson, Hiner J (2).....*English*..... Bloomington.
 A.B., Indiana University, *1916.
- Tucker, William Motier (s,1,2).....*Geology*..... Osgood.
 A.B., Indiana University, 1908; A.M., 1909.
- Tucker, Glenn Forest (s).....*Physics*..... Georgetown.
 A.B., Indiana University, 1914.
- Tudor, Jennie Delia (s).....*English*..... Bloomington.
 A.B., Indiana University, 1915.
- Townsend, Ray Wiston (s).....*Education*..... Matthews.
 A.B., Butler College, 1915.
- Tull, Pauline (1,2).....*English*..... Hanover.
 A.B., Hanover College, 1914.
- Twining, Simon Ercile (2).....*Economics*..... Bloomington.
 Ph.B., Notre Dame, 1913; A.M., Indiana University, 1914.
- Voris, Clarence R (s).....*Chemistry*..... Madison.
 A.B., Hanover College, 1914.
- Voris, Harrison Scott (s).....*Education*..... Madison.
 A.B., Hanover College.
- Warren, Don Cameron (1,2).....*Zoology*..... Saratoga.
 A.B., Indiana University, 1914.
- Watson, Carl Swartney (s).....*Physics*..... W. Lafayette.
 A.B., Indiana University, 1914.
- Weatherwax, Lewis Estel (1,2).....*Education*..... Bloomington.
 A.B., Indiana University, 1910.

- Weatherwax, Paul (1,2).....*Botany*..... Bloomington.
A.B., Indiana University, 1914; A.M., 1915.
- Weaver, (Mrs.) Elenora Kauffman (1, 2) *History*..... Goshen.
A.B., Goshen College, 1913.
- Weaver, John E (1,2).....*Mathematics*..... Goshen.
A.B., Goshen College, 1913.
- Wellons, Ralph Dillingham (s).....*Education*..... Bloomington.
A.B., Indiana University, 1914.
- Weybright, Iva Marie (s).....*Home Economics*.. Bloomington.
A.B., Indiana University, 1914.
- White, Roy Lewis (s).....*Education*..... Bloomington.
A.B., Indiana University, 1915
- White, Cecile Woodard (s,2)*Philosophy*..... Anderson.
A.B., Indiana University, 1913; A.M., 1915.
- Wilder, Clem (1).....*History*..... Bloomington.
A.B., Indiana University, 1915.
- Wise, Clayton Ray (1,2).....*Education*..... Bloomington.
A.B., Indiana University, 1915.
- Wolfe, Louise Agnes (1,2).....*English*..... North Manchester.
A.B., Indiana University, 1915.
- Woodburn, James Gelston (1,2).....*Mathematics*..... Bloomington.
A.B., Indiana University, 1915.
- Woods, John Hall (s).....*Education*..... Princeton.
A.B., Indiana University, 1914.
- Wright, Emerson Blaine (s,2).....*Botany*..... Bloomington.
A.B., Indiana University, 1913.
- Van Auken, Clarice (1).....*German*..... Bloomington.
A.B., University of Wisconsin, 1909.
- Zaring, Ivan Armon (s).....*Philosophy*..... Salem.
A.B., Indiana University, 1915.
- Zeigler, Lloyd Hiram (1).....*Philosophy*..... Bippus.
A.B., Indiana University, 1914.
- Zimmerman, Charles (s,1).....*History*..... North Vernon.
A.B., Indiana State Normal School.

SUMMARY

Enrolled in Summer session, 1915.....	98
Enrolled in First semester, 1915-16.....	91
Enrolled in Second semester, 1915-16.....	99
Total enrollments.....	288
Deduct names enrolled in more than one session.....	96
Net total.....	192

In 2u2g
1917/18

OCT 8 - 1917

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Vol. XV}
No. 6}

INDIANA UNIVERSITY BULLETIN
(OFFICIAL SERIES)

{ May 1
1917

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INDIANA UNIVERSITY GRADUATE SCHOOL



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Announcements, 1917-18

1917

APRIL							MAY							JUNE						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
1	2	3	4	5	6	7	.	.	.	1	2	3	4	5	1	2
8	9	10	11	12	13	14	6	7	8	9	10	11	12	3	4	5	6	7	8	9
15	16	17	18	19	20	21	13	14	15	16	17	18	19	10	11	12	13	14	15	16
22	23	24	25	26	27	28	20	21	22	23	24	25	26	17	18	19	20	21	22	23
29	30	27	28	29	30	31	.	.	24	25	26	27	28	29	30
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JULY							AUGUST							SEPTEMBER						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
1	2	3	4	5	6	7	.	.	.	1	2	3	4	1
8	9	10	11	12	13	14	5	6	7	8	9	10	11	2	3	4	5	6	7	8
15	16	17	18	19	20	21	12	13	14	15	16	17	18	9	10	11	12	13	14	15
22	23	24	25	26	27	28	19	20	21	22	23	24	25	16	17	18	19	20	21	22
29	30	31	.	.	.	.	26	27	28	29	30	31	.	23	24	25	26	27	28	29
.	.	.	.	.	.	.	.	.	.	.	.	.	.	30	.	.	.	.	.	.
OCTOBER							NOVEMBER							DECEMBER						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
.	.	1	2	3	4	5	6	.	.	.	1	2	3	.	.	.	.	.	.	1
7	8	9	10	11	12	13	4	5	6	7	8	9	10	2	3	4	5	6	7	8
14	15	16	17	18	19	20	11	12	13	14	15	16	17	9	10	11	12	13	14	15
21	22	23	24	25	26	27	18	19	20	21	22	23	24	16	17	18	19	20	21	22
28	29	30	31	.	.	.	25	26	27	28	29	30	.	23	24	25	26	27	28	29
.	.	.	.	.	.	.	.	.	.	.	.	.	.	30	31	.	.	.	.	.

1918

JANUARY							FEBRUARY							MARCH						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
.	.	1	2	3	4	5	5	.	.	.	.	1	2	.	.	.	.	.	1	2
6	7	8	9	10	11	12	3	4	5	6	7	8	9	3	4	5	6	7	8	9
13	14	15	16	17	18	19	10	11	12	13	14	15	16	10	11	12	13	14	15	16
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27	28	29	30	31	.	.	24	25	26	27	28	.	.	24	25	26	27	28	29	30
.	31
APRIL							MAY							JUNE						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
.	.	1	2	3	4	5	6	.	.	.	1	2	3	4	.	.	.	.	.	1
7	8	9	10	11	12	13	5	6	7	8	9	10	11	2	3	4	5	6	7	8
14	15	16	17	18	19	20	12	13	14	15	16	17	18	9	10	11	12	13	14	15
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28	29	30	26	27	28	29	30	31	.	23	24	25	26	27	28	29
.	30

Session days of First and Second semesters in bold faced figures. Days of Summer session 1917 (except *special* schedules of the School of Education and of the School of Law), are in italic.

University Calendar

SUMMER SESSION, 1917

June 14, Thursday.

June 15, Friday.

August 10, Friday, 5:00 p.m.

Registration and enrollment in classes.

Recitations and lectures begin.

Summer session ends.

**SPECIAL SCHEDULES OF THE SCHOOL OF EDUCATION.—Courses for Class A and Class B teachers begin Monday, June 11, and end Friday, August 24. Classes are held on the following Saturdays: July 14, 21, August 4, 11, 18. Research courses run from the opening of the Summer session until August 24.

SCHOOL OF LAW.—Courses begin June 11 and end August 24. After July 23, instruction is given six days a week.

BIOLOGICAL STATION (at Winona Lake, Ind.).—Opens Saturday, June 16, and closes Friday, August 17. First half closes July 20, and second half begins July 14.

REGULAR SESSION, 1917-18

FIRST SEMESTER

Sept. 17 and 18, Monday and Tuesday. Matriculation and registration; examinations for admission.

September 18, Tuesday.

September 19, Wednesday.

Nov. 29 and 30, Thursday and Friday.

December 21 to January 2.

January 3, Thursday, 8:00 a.m.

January 21, Monday.

January 25, Friday.

February 1, Friday, 5:00 p.m.

Enrollment in classes.

Recitations and lectures begin.

Thanksgiving recess.

Christmas recess.

Work resumed.

Foundation Day: a holiday.

Final examinations begin.

First semester ends.

SECOND SEMESTER

Feb. 1, 2, 4, Fri., Sat., Mon.

February 4, Monday.

February 5, Tuesday.

February 22, Friday.

March 28, Thursday, 12m.

April 2, Tuesday, 8:00 a.m.

May 30, Thursday.

May 31, Friday.

June 8, Saturday, 5:00 p.m.

June 12, Wednesday.

Matriculation and registration.

Enrollment in classes.

Recitations and lectures begin.

Washington's Birthday: a holiday.

Easter vacation begins.

Work resumed.

Memorial Day: a holiday.

Final examinations begin.

Second semester ends.

Commencement.

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Prefatory Note

INDIANA UNIVERSITY is the State University of Indiana, and the head of the public school system of the State. It takes its origin from the State Seminary, which was established by act of the legislature, approved January 29, 1820. In 1828 the title of the Seminary was changed by the legislature to that of the Indiana College, and in 1838 the University was given its present name. In 1867 Indiana University became coeducational.

The University comprises the following schools:

- The College of Liberal Arts, founded as the Indiana Seminary in 1820.
- The School of Law, organized in 1842 and reorganized in 1889.
- The School of Medicine, organized in 1903, and reorganized in 1908.
- The Training School for Nurses, established in the fall of 1914.
- The Graduate School, organized in 1904.
- The School of Education, organized in 1908.
- The Extension Division, organized in 1912.
- The Summer Session, organized in 1890, reorganized in 1900.

The first advanced degrees conferred for graduate work were granted in 1882. In 1904, there took place the segregation and formal organization of the Graduate School, and in 1908 the office of Dean of the Graduate School was created.

This number of the Bulletin is devoted to setting forth the facilities for graduate work in the several departments of the University. The attention of graduates of other Indiana colleges is invited to the announcement on page 14 of ten scholarships established by the Board of Trustees for such students. The value of these scholarships is \$200 each; they also carry with them exemption from Contingent, Library, and regular laboratory fees. For further information concerning the Graduate School, address,

THE DEAN OF THE GRADUATE SCHOOL,
Bloomington, Indiana.

Officers and Faculty of the Graduate School

COUNCIL

*CARL H EIGENMANN, Ph.D., Dean of the Graduate School, and Professor of Zoölogy.

EDGAR ROSCOE CUMINGS, Ph.D., Acting Dean, and Professor of Geology.

ROBERT EDWARD LYONS, Ph.D., Professor of Chemistry.

ARTHUR LEE FOLEY, Ph.D., Professor of Physics.

DAVID MYERS MOTTIER, Ph.D., Professor of Botany.

ULYSSES GRANT WEATHERLY, Ph.D., Litt.D., Professor of Economics and Sociology.

ERNEST HIRAM LINDLEY, Ph.D., Professor of Philosophy and Psychology.

BURTON DORR MYERS, A.M., M.D., Professor of Anatomy.

SAMUEL BANNISTER HARDING, Ph.D., Professor of European History.

BERT JOHN VOS, Ph.D., Professor of German.

DAVID ANDREW ROTHROCK, Ph.D., Professor of Mathematics.

WILLIAM J MOENKHAUS, Ph.D., Professor of Physiology.

ALFRED MANSFIELD BROOKS, A.M., Professor of Fine Arts.

WILL DAVID HOWE, Ph.D., Professor of English.

SELATIE EDGAR STOUT, Ph.D., Professor of Latin.

fessor of School Administration.

JOSEPH WILLIAM PIERCY, A.B., Professor of Journalism.

HENRY LESTER SMITH, Ph.D., Dean of the School of Education, and Pro-

GEORGE DAVIS MORRIS, Dr.d'U. (Paris), Associate Professor of French.

FRANK WILLIAM TILDEN, A.M., Associate Professor of Greek.

GUIDO HERMANN STEMPPEL, A.M., Associate Professor of Comparative Philology.

WILBUR ADELMAN COGSHALL, A.M., Associate Professor of Astronomy.

FRANK GREENE BATES, Ph.D., Associate Professor of Political Science, and

Secretary of the Council.

FACULTY OF THE GRADUATE SCHOOL

WILLIAM LOWE BRYAN, Ph.D., LL.D., President of the University.

HORACE ADDISON HOFFMAN, A.M., Professor of Greek.

JAMES ALBERT WOODBURN, Ph.D., LL.D., Professor of American History.

*CARL H EIGENMANN, Ph.D., Professor of Zoölogy, and Director of the Biological Station.

ROBERT EDWARD LYONS, Ph.D., Professor of Chemistry.

ARTHUR LEE FOLEY, Ph.D., Professor of Physics.

DAVID MYERS MOTTIER, Ph.D., Professor of Botany.

†ALBERT FREDERICK KUERSTEINER, Ph.D., Professor of Romance Languages.

ULYSSES GRANT WEATHERLY, Ph.D., Litt.D., Professor of Economics and Sociology.

ERNEST HIRAM LINDLEY, Ph.D., Professor of Philosophy and Psychology.

*Relieved of teaching duties from August 1, 1916, to August 1, 1917.

†Absent on leave during academic year, 1916-17.

BURTON DORR MYERS, A.M., M.D., Professor of Anatomy.

SAMUEL BANNISTER HARDING, Ph.D., Professor of European History.

AMOS SHARTLE HERSHHEY, Ph.D., Professor of Political Science and International Law.

BERT JOHN VOS, Ph.D., Professor of German.

WILLIAM A. RAWLES, Ph.D., Professor of Political Economy.

CARL WILHELM FERDINAND OSTHAUS, A.M., Professor of German.

SCHUYLER COLFAX DAVISSON, Sc.D., Professor of Mathematics.

DAVID ANDREW ROTHROCK, Ph.D., Professor of Mathematics.

WILLIAM J. MOENKHAUS, Ph.D., Professor of Physiology.

LOUIS SHERMAN DAVIS, Ph.D., Professor of Chemistry.

ALFRED MANSFIELD BROOKS, A.M., Professor of Fine Arts.

WILL DAVID HOWE, Ph.D., Professor of English.

WILLIAM WESLEY BLACK, A.M., Professor of Elementary Education.

WILLIAM FREDERICK BOOK, Ph.D., Professor of Educational Psychology.

CHARLES JACOB SEMBOWER, Ph.D., Professor of English.

EDGAR ROSCOE CUMINGS, Ph.D., Professor of Geology.

ROBERT JOSSELYN LEONARD, A.M., Professor of Vocational Education.

SELATIE EDGAR STOUT, Ph.D., Professor of Latin.

WILLIAM BAIRD ELKIN, Ph.D., Acting Professor of Philosophy.

JOSEPH WILLIAM PIERCY, A.B., Professor of Journalism.

HENRY LESTER SMITH, Ph.D., Professor of School Administration.

GEORGE DAVIS MORRIS, Dr. d'U. (Paris), Associate Professor of French.

FRANK WILLIAM TILDEN, A.M., Associate Professor of Greek.

GUIDO HERMANN STEMPFL, A.M., Associate Professor of Comparative Philology.

CHARLES ALFRED MOSEMILLER, A.B., Associate Professor of Romance Languages.

ROLLA ROY RAMSEY, Ph.D., Associate Professor of Physics.

OLIVER W. BROWN, A.M., Associate Professor of Chemistry.

FRANK MARION ANDREWS, Ph.D., Associate Professor of Botany.

LILLIAN GAY BERRY, A.M., Associate Professor of Latin.

HENRY THEW STEPHENSON, B.S., A.B., Associate Professor of English.

WILBUR ADELMAN COGSHALL, A.M., Associate Professor of Astronomy.

ULYSSES SHERMAN HANNA, Ph.D., Associate Professor of Mathematics.

JOSHUA WILLIAM BEDE, Ph.D., Associate Professor of Geology.

FRANK GREENE BATES, Ph.D., Associate Professor of Political Science.

FRANK CURRY MATHERS, Ph.D., Associate Professor of Chemistry.

CLARENCE EARL MAY, Ph.D., Associate Professor of Chemistry.

FERNANDUS PAYNE, Ph.D., Associate Professor of Zoölogy.

MABEL THACHER WELLMAN, A.B., Associate Professor of Home Economics.

EDNA GERTRUDE HENRY, A.M., Director of Social Service (Indianapolis).

HUBERT GUY CHILDS, A.M., Associate Professor of Education.

JOHN BENJAMIN DUTCHER, Ph.D., Associate Professor of Physics.

JOHN HILL, Ph.D., Associate Professor of Spanish.

GEORGE FULLMER REYNOLDS, Ph.D., Associate Professor of English.

PRESTON ALBERT BARBA, Ph.D., Associate Professor of German.

WILLIAM NEWTON LOGAN, Ph.D., Associate Professor of Geology.

GARLAND GREEVER, Ph.D., Associate Professor of English.

JAMES M. VAN HOOK, A.M., Assistant Professor of Botany.

- WILL SCOTT, Ph.D., Assistant Professor of Zoölogy.
ROBERT E BURKE, A.M., Assistant Professor of Fine Arts.
FRED A MOLBY, Ph.D., Assistant Professor of Physics.
ELIZABETH SAGE, B.S., Assistant Professor of Home Economics.
FRANK TENNEY STOCKTON, Ph.D., Assistant Professor of Economics and Sociology.
ALBERT LUDWIG KOHLMAYER, A.M., Assistant Professor of History.
KENNETH POWERS WILLIAMS, Ph.D., Assistant Professor of Mathematics.
JAMES GROVER McDONALD, A.M., Assistant Professor of History.
JOSEPH ALEXANDER WRIGHT, A.B., Assistant Professor of Journalism.
JOHN AMBROSE HESS, A.M., Assistant Professor of German.
FRANK C SENOUR, A.M., Assistant Professor of English.
JACOB A BAEDERTSCHER, Ph.D., Assistant Professor of Anatomy.
FRANCES LUCY SWAIN, B.S., A.M., Assistant Professor of Home Economics.
JOHN AUGUSTUS LAPP, Ph.B., Nonresident Lecturer on Social Legislation.
CLARENCE EDMUND EDMONDSON, Ph.D., Instructor in Physiology.
LOGAN ESAREY, Ph.D., Instructor in Western History.
WILL TALIAFERRO HALE, Ph.D., Instructor in English.
ROBERT WITHERINGTON, Ph.D., Instructor in English.
MILDRED ARBRO HOGE, Ph.D., Instructor in Zoölogy.
TOBIAS DANTZIG, Lic ès Se., Instructor in Mathematics.
GEORGE CLYDE HALE, A.M., Instructor in Chemistry.

The Graduate School

GENERAL STATEMENT

Purpose and Administration. The Graduate School furnishes opportunities for advanced work leading to careers in higher education and in certain lines of investigation. It does not offer work leading to professional degrees in Law or in Medicine.

The work of the School is a direct continuation of that of the College of Liberal Arts; and as such it is the most advanced work in education undertaken by the State.

The School is administered by the Council of the Graduate School, composed of members of the Faculty representing different fields of learning.

Admission. Students holding a Bachelor's degree in Arts, or in Science, from Indiana University, or the same degree, or its equivalent, from institutions of similar rank, are admitted to the Graduate School on presentation of satisfactory credentials, which should include a certificate of graduation and a transcript of the college record. Persons holding the Bachelor's degree from institutions whose requirements are considered to lack a year, or more, of being the equivalent of the A.B. degree from this institution, are not admitted to the Graduate School. They may enter the College of Liberal Arts, and are referred to the Dean of the College for their standing. Holders of the A.B. degree, or, its equivalent, from institutions whose requirements lack less than a year of being the equivalent of the A.B. degree from this institution may be admitted to the Graduate School. In such cases, work in addition to the minimum of thirty hours for the A.M. degree will be required. The amount will be determined in each case by the Council of the Graduate School. In all cases, the student must complete to the satisfaction of the department of the major subject the graduate work required in that department for the A.M. or the Ph.D. degree.

All graduate students will enroll at the beginning of each semester, and those entering regularly organized classes will submit to the same regulations as undergraduate students. Work will in many cases be individual and not controlled by a recitation schedule. At the time of entrance to the Graduate School the student must submit a plan of the entire work he wishes to present for the Master's or Doctor's degree. This plan must be approved by the professor of the major subject and the Dean of the Graduate School. Graduate work done before filing such plan will ordinarily not be counted toward advanced degrees.

The Library. The Library of Indiana University at present contains over 115,000 cataloged volumes. The selection of these books has been made with a view to facilitating instruction and research. The collection is a well balanced one, but is especially strong in literary and scientific periodicals. The list of periodicals received and permanently kept on file by the library numbers about four hundred, and includes American, English,

German, French, and, to a less extent, Italian, Spanish, and Swedish publications. The library is made thoroly usable by a carefully prepared card catalog, by indexes, and by other bibliographical aids.

In the library building are seminary rooms for the Departments of History, Economics and Sociology, Philosophy, German, Romance Languages, Latin, Greek, and Political Science.

In addition to the central library, where the general literary and historical collections are housed, there are nine departmental collections, of varying sizes, kept in the different University buildings.

All books, with the exception of periodicals and books reserved for reference, may be drawn for home use. Each student may draw books for two weeks, with privilege of renewal, but subject to recall.

The library is open Monday to Friday, from 7:45 a.m. to 10:00 p.m., and on Saturdays from 8:00 a.m. to 5:00 p.m.

Fees. Students who are legal residents of the State of Indiana are charged a Contingent fee of \$9 a semester, and a Library fee of \$1.50 a semester. These fees cover in part the cost of the physical maintenance of the University, and are not applied to the cost of tuition, which is provided wholly by the State.

Students not legal residents of the State of Indiana will be charged a Contingent and Library fee amounting to \$30 a semester. The Summer session fee is \$15, irrespective of the length of the course, except for a half-term's work in law, where \$10 is charged.

The Laboratory fees in all courses are uniformly \$1.50 per credit hour,* except in the School of Medicine, and for courses in domestic art. In the latter case the fee is \$1 a semester.

The Gymnasium fee, if the work in Physical Education is taken, is \$1.50 a semester.

An Examination fee of \$1 is charged for each make-up or special examination. This fee is paid to the Bursar; his receipt, when presented to the proper instructor, constitutes the authorization for holding the examination.

The fee for any Degree is \$5, and must be paid to the Bursar at least thirty days before graduation.

DEGREES

Three advanced degrees, Master of Arts, Master of Science, and Doctor of Philosophy, are conferred by the University.

Master of Arts. The degree Master of Arts may be conferred upon Bachelors of Arts of this University, or of any other institution of equivalent standing, or upon Bachelors of Science provided this degree is an alternative equivalent of the A.B. degree, following a residence at the University of a minimum of two semesters and the completion of a minimum of thirty hours of University credit; and in addition the passing of an oral examination on the work taken for the degree, when required by the major department.

*The increased cost of chemicals and other laboratory supplies, owing to the European war, has necessitated an increase of about twenty-five per cent in the laboratory fees of the Department of Chemistry.

Credit earned in excess of that required for the A.B. or the B.S. degrees, before the degree is conferred or a certificate of the completion of the work for the degree is issued, is not counted toward the A.M. degree without special action of the Graduate Council before the work is done.

Twenty of the total of thirty hours required for the A.M. degree must be in one department, or in closely allied departments. Ten hours must be distinctly graduate in character. There is no restriction as to the amount of work that may be carried during any semester.

The work for the A.M. degree may all be done in Summer sessions, provided that the work for the degree be completed within five years.

Professional studies are not accepted for the graduate degrees, but research work on professional subjects may be accepted for these degrees at the option of the professor in charge of the major subject.

A thesis is required in all departments except in the departments of English and Latin.

Freshman courses will not be counted on advanced degrees.

The first ten hours in beginning French and German do not count on advanced degrees except by permission of the Graduate Council, on the written recommendation of the professor in charge of the major subject. The Council shall in such cases fix the amount of credit to be given. The amount of credit that a student may receive for elementary courses in other subjects is determined by the professor in charge of the major subject.

It is strongly urged that all students gain some proficiency in foreign modern language before entering the Graduate School. Credit in ten hours in foreign modern language, or the certified equivalent, is required of candidates for the A.M. degree. If the candidate does not meet this requirement before entering the Graduate School, he must obtain credit for ten hours of foreign language in addition to the regular thirty hours required for the A.M. degree, unless by special act of the Graduate Council partial credit is allowed for this work in accordance with the provisions noted in the preceding paragraph.

Master of Science. The degree Master of Science may be conferred upon Bachelors of Science of Indiana University under the same conditions upon which the degree of Master of Arts is conferred on Bachelors of Arts.

Doctor of Philosophy. The degree Doctor of Philosophy may be conferred upon graduates of this University, or of any institution of similar character and rank, upon the completion of an advanced course of study of not less than three years.

Each candidate for this degree will select a major subject consisting of the work of some one department or recognized subdivision of a department; and not less than two minors, at least one of which must be in some department related to, but distinct from, that of the major subject.

The course for the degree will be pursued under the direction of a committee consisting of the heads of the departments in which the work is done. Its value will be determined by a final examination, and by the presentation of a satisfactory thesis. The thesis should usually embody original work upon some prescribed or accepted subject; it must always give evidence that the candidate is capable of forming an independent judgment upon the recent literature of his department.

A detailed statement of the work offered for the degree, indorsed by the professor in charge of the major subject, must be submitted to the Council of the Graduate School not later than May 10 of the year in which the candidate presents himself for examination.

On the recommendation of the professor in charge of the major subject, and with the concurrence of the Council of the Graduate School, part of the three years' study required for this degree may be spent in residence at other universities.

The thesis of every candidate for the Doctor's degree shall be presented to the Council of the Graduate School on or before the first day of June of the year in which he is a candidate for the degree. The thesis must be indorsed by the head of the department as being in its final form, and ready for the press. If the candidate is recommended for the degree, arrangements must be made to deposit five printed copies of the thesis in the library.

The examination of each candidate for this degree will be conducted by a committee consisting of all the instructors under whom graduate work has been taken, in the presence of such members of the Faculty of the School as care to attend.

At least one year before the final examination the candidate shall satisfy the professor in charge of the major subject of his ability to use French and German for purposes of investigation.

Application for Degrees. Application for an advanced degree must be filed with the Dean at the time of admission of the candidate to the Graduate School. Application for the Doctor's degree must be on file at least one year before the candidate is admitted to the examination.

FELLOWSHIPS

University Fellowships. A number of University fellowships are available for graduate students. These fellowships carry with them an honorarium of between \$200 and \$500 annually. The highest amount will ordinarily be paid only if the incumbent is appointed for a third year. A fellowship is a recognition of scholarship. A portion of the fellow's time may be required in the service of the department in which he is appointed. Appointments are for one year.

Lawrence Fellowship in Astronomy. The Lawrence Fellowship of the Department of Astronomy has been established by Mr. Percival Lowell, of the Lowell Observatory, upon the following terms and conditions:

1. The fellowship shall be known as the Lawrence Fellowship, in remembrance of the donor's mother, and is established in perpetuity, revocable, however, at any time at the will of the founder.

2. It shall be annually available and shall cover the college calendar year, that is, from commencement to commencement of the same.

3. The applicant shall be appointed by the Department, the donor reserving the right of finally passing upon the suitability of the candidate so presented.

4. The fellow shall be given time and opportunity for an original thesis on some astronomical subject looking to the taking of a Master's degree, the nature of which shall be decided by the Director and the fel-

low. But the fellow shall be expected to give general assistance in the work of the Observatory during the period of his fellowship.

5. The fellowship will pay \$600 and the fellow's traveling expenses to and from the Observatory at Flagstaff, Ariz.; and a furnished room at the Observatory shall be free to the fellow's use.

Special Fellowships. There are besides the fellowships mentioned above, three special fellowships ranging in value from \$500 to \$1,000. These fellowships are created only for men of exceptional ability and merit, who may or may not have received the Ph.D degree.

Scholarships for Graduates of Other Indiana Colleges. The Trustees of Indiana University, at their March meeting, 1910, established ten graduate scholarships of an annual value of \$200 each, to be held by graduates of other colleges in the State. In awarding these scholarships the policy is to assign them to the most promising students, irrespective of the special field of study in which they wish to work, or the particular institutions from which they come. As between cases of equal merit, however, attention is given to securing a distribution of the awards among different departments of study and different colleges of the State.

Applicants for these scholarships should file a statement of their educational history and of their plans with the Dean of the Graduate School. They should indicate in this statement the major subject which they wish to pursue, and give a transcript of their college record. They should also present at this time recommendations from their instructors, and such other evidences of their fitness as they can offer. Applications will be received up to March 1 of each year.

Applications are referred in each case to the department concerned for a decision upon the respective merits of the applicants in that department. On the basis of the departmental reports, the Graduate Council recommends to the Trustees the most eligible candidate for appointment.

These scholarships are not open to students doing professional work in Law or in Medicine.

For application blanks, and further information, address the Dean of the Graduate School.

Special Rules Concerning Fellows and Scholars. Holders of fellowships and scholarships may be required to render some service to the University and are not permitted, without the special permission of the Graduate Council, to do other work for remuneration.

All fellows and scholars are exempted from the payment of Contingent, Library, and regular Laboratory fees.

WATERMAN INSTITUTE FOR SCIENTIFIC RESEARCH

At a meeting of the Trustees of the University on May 12, 1915, Dr. Luther Dana Waterman, Professor Emeritus of Medicine in the Indiana University School of Medicine, presented to the Trustees deeds for property amounting in value to \$100,000, on the following conditions:

1. That he shall retain the management and income from the property during his lifetime.

2. That the proceeds from the property be devoted to the establishment and permanent maintenance of an Institute for Scientific Research.

3. That the Trustees bind themselves to appropriate annually an amount of money for the Institute equal to the annual proceeds from the property.

The Trustees accepted the proposal of Dr. Waterman in the following terms: "Resolved, That the generous gift of Dr. Luther D. Waterman to the University for the purpose therein stated be and is hereby accepted with the thanks of the Board. We hereby pledge the faith of the institution to carry out the conditions therein contained."

Departments and Courses of Instruction, 1917-18

**In the following announcement of courses the Roman numerals I and II indicate whether a course is given in the First or Second semester, respectively. The letters *a* and *b* used in a course number indicate which half (or semester) of the year's work is being announced if the course is one which is given thruout the University year. University credit is reckoned in semester hours, indicated in parentheses by the abbreviation "cr."

DEPARTMENT OF ANATOMY

Professor MYERS; Assistant Professor BADERTSCHER.

The following are the courses open to graduate students in the Department:

13. Research Work. Opportunity for research work is offered to advanced students who may have at least one-half their time for one year free for the work. I, II. Hours to be arranged.

Mr. MYERS, Mr. BADERTSCHER.

15. Advanced Course in Anatomy. Open to students who have completed the dissection of the human body and Course 8. I, II. Hours to be arranged.

Mr. MYERS, Mr. BADERTSCHER.

DEPARTMENT OF ASTRONOMY

Associate Professor COGSHALL

Graduate work in this Department is partially provided for by the Lawrence Fellowship in Astronomy, mentioned under that heading in this bulletin. Other work of a graduate nature carried on at the University is included under the courses described below.

For a desription of Kirkwood Observatory and its equipment see the University Catalog.

13. Astronomical Research. I, II. Days, hours, and credit to be arranged.

Mr. COGSHALL.

14. Orbits of Spectroscopic Binaries. II. Days, hours, and credit to be arranged.

Mr. COGSHALL.

DEPARTMENT OF BOTANY

Professor MOTTIER; Associate Professor ANDREWS; Assistant Professor VAN HOOK.

Following are the courses open to graduate students in the Department:

4. Morphology of Fungi. I. Daily, 1-3. (5 cr.) Repeated II.

Mr. VAN HOOK.

5. Plant Physiology. I. Daily, 1-3. (5 cr.) Repeated II.
Mr. ANDREWS.
6. Cytology. I. Daily, 1-3. (5 cr.) Mr. MOTTIER.
- 5A. Research in Physiology. I, II. Days and hours to be arranged.
Mr. ANDREWS,
7. Research in Morphology and Cytology. Ability to read French and German is assumed. I, II. Daily, at hours to be arranged.
Mr. MOTTIER.
13. Morphology of the Algae. I, II. Daily, at hours to be arranged.
Mr. MOTTIER.
18. Investigations in Mycology and Plant Pathology. I, II. Daily, 1-3.
Mr. VAN HOOK.

DEPARTMENT OF CHEMISTRY

Professors LYONS and DAVIS; Associate Professors BROWN, MATHERS, and MAY; Instructor HALE; Tutor PAPISH.

Special attention is given to inorganic, organic, physiological, and physical chemistry and to electrochemistry, technical analytical chemistry, and electrometallurgy.

The graduate work of the Department, leading to the A.M. and Ph.D. degrees, comprises advanced laboratory, lecture, library, and seminary work in the lines indicated above, and special graduate courses described below. A thesis embodying original investigation is required for an advanced degree.

The laboratories for advanced work and the departmental library are open from 8:00 a.m. to 4:50 p.m. There are no classes in the laboratories; each student works independently.

19. Physical Chemistry. Laboratory work. I, II. Laboratory open daily, 8-5. Hours to be arranged. Mr. BROWN, Mr. HALE.
22. Electrochemistry. II. Lectures (A), M.W., at 8; laboratory (B), T.Th.F., 1-5. (22A, 2 cr.; 22B, 1 or more cr.) Mr. BROWN, Mr. HALE.
15. Advanced Technical and Engineering Analysis. II. Laboratory open daily, 8-5. Hours to be arranged. Mr. MATHERS.
32. Gas and Fuel Analysis. II. Lectures (A), T., at 1; laboratory (B), at hours to be arranged. (2 cr.) Mr. MATHERS.
33. Spectrum Analysis and Sugar Analysis. I (first thirteen weeks). Lectures (A), F., at 1; laboratory (B), at hours to be arranged. (2 cr.) Mr. MATHERS.
26. Chemical Engineering. I. M.W.F., at 11. Mr. BROWN.
14. Seminary: Inorganic Chemistry, Organic Chemistry, Electrochemistry, and Industrial Chemistry, The Reading of Chemistry Literature from German Textbooks. I, II. Th., at 7 p.m. Mr. LYONS, Mr. BROWN, Mr. MATHERS, Mr. MAY, Mr. PAPISH.

59. Research: Organic or Physiological Chemistry. I, II. Hours to be arranged. Mr. LYONS, Mr. MAY.
51. Research: Chemistry of the Alkaloids. I, II. Hours to be arranged. Mr. DAVIS.
52. Research: Electrochemistry, Electrometallurgy, and Physical Chemistry. I, II. Hours to be arranged. Mr. BROWN.
53. Research: Inorganic Chemistry. I, II. Hours to be arranged. Mr. MATHERS.
24. Advanced Electrochemistry and Electrometallurgy. I, II. Lectures (A), F., at 8 (Second semester); laboratory (B), at hours to be arranged. Mr. BROWN.
25. Advanced Organic Chemistry. I, II. Lectures (A), T.Th., at 11 (First semester); laboratory (B), at hours to be arranged. Mr. MAY.
13. Elementary Metallurgy and Assaying. I. Lectures (A), M.W., at 8; laboratory (B), open F., 8-5. (3 cr.) Mr. BROWN, Mr. HALE.
29. Storage Batteries. I. Lectures, F., at 8; laboratory, one or more periods a week. Mr. BROWN.
31. Advanced Inorganic Chemistry. I, II. Laboratory open daily, 8-5. Hours to be arranged. Mr. MATHERS.

DEPARTMENT OF COMPARATIVE PHILOLOGY

Associate Professor STEMPLE.

The graduate courses offered below will be extended as required. They may be supplemented by certain of the courses listed as undergraduate, as well as by certain courses given in the other language departments and in History, Sociology (Descriptive Sociology), Philosophy, and English.

- [5. Comparative Philology of the Classical Languages. I, II. M.W.F.]
at an hour to be appointed. (6 cr.) Mr. STEMPEL.]
Omitted in 1917-18.
- [4. Gothic. I, II. T.Th., at 11. (4 cr.) Mr. STEMPEL.]
Omitted in 1917-18. Given in alternate years with 9.
- [8. Sanskrit. I, II. M.W.F., at 10. (6 cr.) Mr. STEMPEL.]
Omitted in 1917-18.
9. Old High German. I, II. T.Th., at 11. (4 cr.) Mr. STEMPEL.
- [10. Middle High German. I, II. T.Th., at an hour to be appointed. (4 cr.) Mr. STEMPEL.]
Omitted in 1917-18.
- [11. Old Icelandic. I, II. M.W.F., at 9. (6 cr.) Mr. STEMPEL.]
Omitted in 1917-18.
15. Seminary in Historical English Grammar. I, II. W., 2-4. Mr. STEMPEL.

DEPARTMENT OF ECONOMICS AND SOCIOLOGY

Professors WEATHERLY and RAWLES; Assistant Professor STOCKTON.

Following are the courses open to graduate students in the Department:

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| 3a. Public Finance. I. M.W.F., at 8. (3 cr.) | Mr. STOCKTON. |
| 3b. Special Tax Problems. II. M.W.F., at 8. (3 cr.) | Mr. STOCKTON. |
| 9. Transportation. II. M.W.F., at 9. (3 cr.) | Mr. RAWLES. |
| 28. Insurance. II. T.Th., at 9. (2 cr.) | Mr. RAWLES. |
| 5. History of Economic Thought. I. M.W.F., at 11. (3 cr.) | Mr. STOCKTON. |
| 12. Labor Organization. II. M.W.F., at 11. (3 cr.) | Mr. STOCKTON. |
| 13. Rural Economics. I. T.Th., at 9. (2 cr.) | Mr. STOCKTON. |
| 20. Descriptive Sociology. (a) Social Evolution. (b) Social Assimilation. I, II. T.Th., at 10. (4 cr.) | Mr. WEATHERLY. |
| 4. Social Pathology. (a) Poverty and Charities. (b) Crime and Penology. I, II. M.W.F., at 10. (6 cr.) | Mr. WEATHERLY. |
| 10a. Socialism. I. T.Th., at 11. (2 cr.) | Mr. WEATHERLY. |
| 10b. Methods of Social Reform. II. T.Th., at 11. (2 cr.) | Mr. WEATHERLY. |
| 7. Principles of Sociology. (a) Social Forces. (b) Social Efficiency. I, II. M.W.F., at 11. (6 cr.) | Mr. WEATHERLY. |
| 30. Graduate Seminary. I, II. At hours to be appointed. | Mr. WEATHERLY. |

DEPARTMENT OF ENGLISH

Professors HOWE and SEMBOWER; Associate Professors STEPHENSON, REYNOLDS, and GREEVER; Assistant Professor SENOUR; Instructors HALE and WITTINGTON.

The Department is prepared to offer research work leading to the A.M. and Ph.D. degrees, in the following periods: Elizabethan literature, the literature of the seventeenth century, of the eighteenth century, and of the first half of the nineteenth century.

For the A.M. degree, the candidate should have had in his undergraduate work the equivalent of thirty hours of English, and should, in his graduate work, pursue a course restricted to three subjects, approved by the Department of English.

For the Ph.D. degree, the candidate will be expected to do at least two full years' work in residence after the Master's degree. He must be able to read German and French, and to do a piece of independent research which will be acceptable to the Department.

The following courses are open to graduate students in the Department:

50. The Nineteenth Century Romantic Poets. I, II. Days and hours to be appointed. (4 cr.) Mr. GREEVER.
51. Elizabethan Non-Dramatic Literature. I, II. T.Th., at 11. (4 cr.) Mr. REYNOLDS.
52. The Drama. I, II. M.W.F., at 11. (6 cr.) Mr. STEPHENSON.
53. Shakspere. I. M.W.F., at 10. (3 cr.) Mr. STEPHENSON.
54. Eighteenth Century Problems. I, II. Two hours each week. (4 cr.) Mr. HOWE.
55. Nineteenth Century Thought. I, II. T.Th., at 10. (4 cr.) Mr. SEMBOWER.
56. The Art of Poetry. II. M.W.F., at 11. (3 cr.) Mr. SEMBOWER.
57. Literary Criticism. I. T.Th., at 9. (2 cr.) Mr. GREEVER.
58. Browning. II. Days and hours to be appointed. (2 cr.) Mr. REYNOLDS.
59. Social Forces in English Literature. II. T.Th., at 9. (2 cr.) Mr. HOWE.
60. Composition Seminary. I, II. T.Th., at 11. (4 cr.) Mr. WITHERINGTON.
Dante (Fine Arts 7). I, II. T.Th., at 11. (4 cr.) Mr. BROOKS.
61. American Literature. II. Prerequisite, 6. Days and hours to be appointed. (2 cr.) Mr. SENOUR.
62. Milton. I, II. T.Th., at 9. (4 cr.) Mr. HALE.

DEPARTMENT OF FINE ARTS

Professor BROOKS; Assistant Professor BURKE.

The following courses in the Department of Fine Arts may count as graduate work on the Master's degree:

1. Engraving and Etching. Lectures on the history and development, with special reference to the art of drawing. I. M.W.F., at 10. (3 cr.) Repeated II. Mr. BROOKS.
2. History of Architecture. Lectures, with collateral reading. (a) Greek and Roman. (b) Medieval and Renaissance. The Second semester's work may be taken without the first half-year's work. I, II. Daily, at 9. (10 cr.) Mr. BROOKS.
3. Sculpture. (a) Greek and Roman. (b) Middle Ages and Renaissance. The Second semester's work may be taken without the first half-year's work. I, II. T.Th., at 10. (4 cr.) Mr. BROOKS.
7. Dante. Lectures on 'The New Life' and 'The Divine Comedy', accompanied by the reading of both in English. I, II. T.Th., at 11. (4 cr.) Mr. BROOKS.

10. Art Criticism. A seminary course in which the art criticism of Reynolds, Ruskin, Pater, Tolstoi, Coleridge, Symonds, Browning, and Hazlitt is studied. I, II. Days and hours to be arranged. (4 er.) - Mr. BURKE.

DEPARTMENT OF GEOLOGY

Professor CUMINGS; Associate Professors BEEDE and LOGAN.

The Department of Geology offers work leading to the A.M. and Ph.D. degrees. Opportunity is afforded for advanced work and investigation in stratigraphic geology and paleontology, and in economic and geographic geology.

Following are the courses open to graduate students in the Department:

3. Economic Geology. I, II. M.W.F., at 8. (6 er.) Mr. LOGAN.
4. Evolution. II. T.Th., at hours to be appointed. (2 er.) Mr. CUMINGS.
5. Systematic Paleontology. I, II. Days and credit to be arranged. Mr. CUMINGS.
10. Research. I, II. Hours to be arranged. Mr. CUMINGS, Mr. BEEDE, Mr. LOGAN.
13. Advanced Field Work: Geological Survey. Days, hours, and credit to be arranged. Mr. BEEDE, Mr. LOGAN.
- [14. Stratigraphic Geology. I, II. M.F., at 9. (4 er.) Mr. CUMINGS.] Omitted in 1917-18.
11. Seminary. I, II. M., at 4. (No credit.) Mr. CUMINGS, Mr. BEEDE, Mr. LOGAN.

DEPARTMENT OF GERMAN

Professors Vos and OSTHAUS; Associate Professor BARBA; Assistant Professor HESS.

The following courses are open to graduate students:

14. German Usage. II. T.Th., at an hour to be appointed. (2 er.) Mr. HESS.
30. Studies in the Modern German Drama. I. M.W.F., at an hour to be appointed. (3 er.) Mr. OSTHAUS.
32. The German Novel and 'Novelle'. II. M.W.F., at an hour to be appointed. (3 er.) Mr. BARBA.
28. Journal Club. I. Two hours weekly, at an hour to be appointed. (2 er.) Mr. Vos.
22. German Seminary. II. Two hours weekly, at an hour to be appointed. (2 er.) Mr. Vos.
27. Middle High German. I. Two hours weekly, at an hour to be appointed. (2 er.) Mr. Vos.

29. History of the German Language. II. Two hours weekly, at an hour to be appointed. (2 cr.) Mr. Vos.
31. Research. I, II. Hours to be arranged. Mr. Vos.

DEPARTMENT OF GREEK

Professor HOFFMAN; Associate Professor TILDEN.

The time that may be at present profitably devoted to graduate work in Greek is one year, leading to the A.M. degree. A thesis on some subject connected with the seminary work of the year is required for the degree.

All candidates for the A.M. degree with Greek as major subject are recommended to take at least ten hours in Latin, in advance of the Latin taken in the undergraduate study.

Courses 9, 12, and 13, or any part of these courses, are also open as minors to graduate students who have not already had as part of their undergraduate study the work which they take in these courses for graduate credit.

Following are the courses open to graduate students in the Department:

9. Lyric and Dramatic Poetry. I, II. Daily, at hours to be appointed. (10 cr.) Mr. TILDEN.
12. Philosophical Prose. I, II. T.Th., at 10. (4 cr.) Mr. HOFFMAN.
13. Historical and Rhetorical Prose. (a) Herodotus and Thueydides. (b) Demosthenes, 'On the Crown'. I, II. M.W.F., at hours to be appointed. (6 cr.) Mr. TILDEN.] Omitted in 1917-18.
- 15A. Graduate Seminary: Euripides. I, II. Th., at hours to be appointed. (4 cr.) Mr. HOFFMAN.
- 15B. Graduate Seminary. Author studied to be selected. I, II. W., at hours to be appointed. (4 cr.) Mr. TILDEN.

DEPARTMENT OF HISTORY

Professors WOODBURN and HARDING; Assistant Professors KOHLMEIER and McDONALD; Instructor ESAREY.

Candidates for the Ph.D. degree with History as major subject will be examined in each of the following fields: (1) Ancient History, with emphasis at the option of the candidate on either Greek or Roman history; (2) Medieval and Modern History, with emphasis on either the medieval or the modern field; (3) English History, with emphasis either on the period before 1603 or after that date; and (4) American History, with chief emphasis either on the period before 1783, or after that date. The examination on the special field of the thesis will naturally be more searching than elsewhere.

Following are the courses open to graduate students in this Department:

6. English Constitutional History. I, II. (6 cr.) M.W.F., at 9. Mr. HARDING.

8. American Colonial History. I, II. T.Th., at 8. (4 er.)
Mr. KOHLMEIER.
9. Renaissance and Reformation. I, II. T.Th., at 11. (4 er.)
Mr. HARDING.
10. Modern Europe. From about 1750 to the present time. I, II.
M.W.F., at 11. (6 er.) Mr. KOHLMEIER.
13. France in the Middle Ages. Ability to read French is a prerequisite.
I, II. T.Th., at 3. (4 er.) Mr. HARDING.
16. Historical Method. I. T.Th., at 2. (2 er.) Mr. HARDING.
17. Historians and History Writing in the Nineteenth Century. II.
T.Th., at 2. (2 er.) Mr. HARDING, Mr. WOODBURN.
22. American Diplomatic History, 1776-1914. I, II. T.Th., at 3.
(4 er.) Mr. KOHLMEIER.
28. Origin and Growth of the American Constitution. I. M.W.F.,
at 9. (3 er.) Mr. WOODBURN.
29. Causes and Results of the Civil War in America. II. M.W.F.,
at 9. (3 er.) Mr. WOODBURN.
30. Development of the American West. I, II. M.W.F., at 8. (6 er.)
Mr. ESAREY.
- 20A. Seminary in English History. I, II. W., 4-5:30. (Credit as
arranged.) Mr. HARDING.
- 20B. Seminary in Modern European History. I, II. W., 4-5:30. (Credit
as arranged.) Mr. McDONALD.
- 20C. Seminary in American History. I, II. M., 4-5:30. (Credit as
arranged.) Mr. WOODBURN.
- 20D. Seminary in Indiana History. I, II. At hours to be arranged.
(Credit as arranged.) Mr. WOODBURN, Mr. ESAREY.

DEPARTMENT OF HOME ECONOMICS

Associate Professor WELLMAN; Assistant Professors SAGE and SWAIN.

To carry graduate work in this Department, students must have completed the equivalent of twenty hours of work in this subject, or must make up the deficiency. The character of the advanced work may be varied according to the needs of the student and may deal with the scientific, the economic, the sociological, or the artistic aspects of the subject.

Following are the courses open to graduate students in the Department:

4. Applied Design. II. T.Th., 1-3. (2 er.) Miss SAGE.
5. History of Costume and Costume Design. Prerequisite, Fine Arts
14. I. Daily, 10-12. (5 er.) Miss SAGE.

14. Dietetics and Food Chemistry. Prerequisites, 10 or 11, 12 (is prerequisite or parallel), Chemistry 3C. I, II. M.W.F., 8-10. (6 cr.)
Miss WELLMAN.
16. Foods III. Prerequisite, 14. I, II. T.Th., 10-12. (4 cr.)
Miss SWAIN.
25. Evolution of the Home. I, II. M.W.F., at 10. (6 cr.) Miss WELLMAN.
26. Economics of the Family. I, II. T.Th., at 8. (4 cr.) Miss SWAIN.
27. Seminary. Hours to be arranged. Miss WELLMAN.
28. Research. Specia' problems. Hours to be arranged.
29. Women and Children in the Textile Industries. I. Hours to be arranged. Miss SAGE.

DEPARTMENT OF JOURNALISM

Professor PIERCY; Assistant Professor WRIGHT.

To students who have taken twenty hours of Journalism as a minor with a major subject in either English, History, Political Science, Philosophy, or Economics, the Department offers one year of graduate work leading to the degree A.M. At least sixteen hours of work in Journalism are required, the other fourteen hours to be arranged for in consultation with the head of the Department. It is contemplated that a thesis shall be an important part of the year's work, and shall receive five hours of credit out of the sixteen. The subject of the thesis will deal either with some phase or field of country journalism, or with some special work in city journalism, the specialization being related, if deemed best, to the student's major subject when an undergraduate.

2. Practical Newspaper Work (on the staff of 'The Indiana Daily Student'). Editorial work exclusively. I, II. Daily, at hours to be arranged. (6 cr.) Mr. WRIGHT.
11. Advanced Course in Newspaper and Magazine Writing. I. T., 3-5. (2 cr.) Repeated II. Mr. PIERCY.
20. Seminary. I, II. Consultation hours to be arranged. Mr. PIERCY.

DEPARTMENT OF LATIN

Professor STOUT; Associate Professor BERRY.

Students who begin the graduate study of Latin after having completed an undergraduate course in the subject equivalent to that required of a major in the Department in Indiana University can complete the work for the Master's degree in one year. In special cases the work can all be done in summer sessions. The writing of a thesis is not required of all candidates for the Master's degree, but it is advised for those who expect to take additional work looking to the degree of Doctor of Philosophy. The work required for the Master's degree, while affording an introduction to the

methods of investigation, is arranged primarily to give a wider and more thorough acquaintance with the language and literature, institutions and history of the Roman people. It is hoped that this will meet equally well the needs of those who wish to become better teachers of Latin in the high schools and the lower grades of the college course, and of those who desire a proper foundation for the more advanced study of Latin.

The purely graduate courses at present offered, and those to be added, will be given in a series such as to offer opportunity for a three years' course of graduate study. Candidates for the Ph.D. degree whose major subject of study is Latin are required to make Greek their principal minor subject. A wide range of choice will be allowed for the second minor subject, the only requirement being that such courses shall contribute in some definite way to the principal work of the candidate. Every library resource required for investigations assigned by the Department will be supplied if not at present in the library.

The Junior and Senior reading courses (Courses 33, 35, 41, 42) of the undergraduate work may be taken for graduate credit if certain additional work of graduate character assigned by the instructor be done in connection with them. The authors read in these courses are varied in different years, and thru a three-year period afford graduate students opportunity for a wide course of reading.

31. History of Latin Literature. I. T.Th., at 9. (2 cr.) Miss BERRY.
33. Junior Reading Course. An elective course, advised for all Latin majors who can arrange to take it. The authors and works read lie in fields of literature not adequately represented in other parts of the Latin course. (a) Cicero's Tuscan Disputations, Book i, with collateral reading from other writers who reflect Roman thought concerning the destiny of the soul. (b) Plautus. Prerequisites, 11, 14, 25, 26. I, II. M.W.F., at 9. (6 cr.)
Miss BERRY.
- [35. Junior Reading Course. Alternates with 33 and is similar in aim.
(a) Prose of the Empire. (b) Juvenal: Selected Satires. I, II. M.W.F., at 9. (6 cr.)
Miss BERRY.]
Omitted in 1917-18.
41. Senior Reading Course. An intensive study of one or more representative authors with collateral reading of other authors in the original and in translations, and written reports on the collateral reading. (a) The classical historians of Rome. (b) Vergil's works. Prerequisite, twenty hours of credit in Latin. I, II. M.W.F., at 11. (6 cr.) Mr. STOUT.
- [42. Senior Reading Course. Alternates with 41 and is similar in aim.
(a) Cicero: Orations. A number of orations will be read which are closely connected with the public life of the time or with the political misfortunes of the author. (b) Readings from the Latin Poets. Chiefly from those who are little read or not read at all in other parts of the Latin course. The selections cover all periods

- of Latin literature. Prerequisite, twenty hours of credit in Latin.
 I, II. M.W.F., at 11. (6 cr.) Mr. STOUT.]
 Omitted in 1917-18.
43. Advanced Prose Composition. II. T.Th., at 11. (2 er.) Mr. MENK.
- [51. Latin Inscriptions. A course to teach the use of inscriptions for purposes of investigation. (2½ cr.) Mr. STOUT.]
 Omitted in 1917-18.
- [52. The Topography and Monuments of Ancient Rome. I, II. T., 4-6. (4 cr.) Miss BERRY.]
 Omitted in 1917-18.
- [53. The Reign of Augustus Caesar. Studied from the sources. Summer session. Daily, at 9. (2½ cr.) Mr. STOUT.]
 Omitted in 1917.
54. The Military System of the Romans. Studied from the classical authors and Latin inscriptions. A considerable amount of Latin will be read, guided in part by lectures on important phases of the subject. A collection of illustrative material suitable for use in the teaching of Caesar will be made. Summer session. Daily, at 7:30. (2½ cr.) Mr. STOUT.
55. The Latin Romance: 'Saturae' of Petronius, and 'Metamorphoses' of Apuleius. A study is made of the origin, characteristics, and later developments of the Latin romance. I, II. M., 3-5. (4 cr.) Miss BERRY.
61. Seminary: The Letters of Pliny the Younger. (a) An introduction to the science of text criticism, based on the text of the letters of Pliny. (b) A series of studies on topics connected with the language and the subject-matter of the letters. I, II. W., 3-5, and another hour to be arranged. (6 cr.) Mr. STOUT.
- [62. Seminary: Political Problems of the Romans. I, II. W., 3-5. (4 cr.) Mr. STOUT.]
 Omitted in 1917-18.

DEPARTMENT OF MATHEMATICS

Professors DAVISSON and ROTROCK; Associate Professor HANNA; Assistant Professor WILLIAMS; Instructor DANTZIG.

The graduate courses at present offered by the Department lead to the A.M. and Ph.D. degrees.

A student wishing to secure the Doctor's degree with Mathematics as major subject must, early in his graduate career, designate one of the following main divisions of Mathematics as his specially chosen field: (1) Arithmetic and Algebra; (2) Calculus and Theory of Functions; (3) Geometry; (4) Applied Mathematics. In his specially chosen field, the candidate must present an acceptable thesis, showing an original treatment and giving evidence of original research, and be examined in three of the fields enumerated above.

The library of the Department, consisting of about 2,500 bound volumes, is located in Room 36, Wylie Hall. The library is open from 8:00 a.m. to 10:00 p.m., for use by students pursuing advanced work in Mathematics.

The following courses are offered for properly qualified students. Days, hours, and credit will be arranged.

21. Theory of Functions.	Mr. ROTHROCK.
39. Theory of Invariants.	Mr. HANNA.
30. Differential Geometry.	Mr. DAVISSON.
[31. Encyclopedia of Elementary Mathematics. Omitted in 1917-18.]	Mr. ROTHROCK.]
44. Non-Euclidean Geometry.	Mr. DAVISSON.
26. Projective Geometry.	Mr. DAVISSON.
32. Theory of Numbers.	Mr. HANNA.
45. Calculus of Variations.	Mr. ROTHROCK.
51. Linear Differential Equations.	Mr. WILLIAMS.
55. Theory of Transformations.	Mr. DANTZIG.
20. Mathematical Reading and Research.	

Professors DAVISSON and ROTHROCK; Associate Professor HANNA; Assistant Professor WILLIAMS; Instructor DANTZIG.

DEPARTMENT OF PHILOSOPHY

Professors LINDLEY and Book; Acting Professor ELKIN; President BRYAN.

Following are the courses open to graduate students in the Department:

35. Modern Idealism. I, II. T.Th., at 10. (4 er.)	Mr. ELKIN.
[36. Logic of Science. I. Two hours once a week, at a period to be appointed. (2 er.) Omitted in 1917-18.]	Mr. ELKIN.]
5. Advanced Psychology. II. M.W.F., at hours to be appointed. (1 er.)	Mr. LINDLEY, Mr. Book.
[7a. Comparative Psychology of Lower Organisms. I. M.W.F., at 11. (3 er.) Omitted in 1917-18.]	Mr. Book.]
30. Seminary in Philosophy. I, II. Two hours a week, at hours to be appointed.	Mr. LINDLEY, Mr. Book.
34. Psychological Seminary. I, II. Two hours a week, at hours to be appointed.	Mr. LINDLEY.

DEPARTMENT OF PHYSICS

Professor FOLEY; Associate Professors RAMSEY and DUTCHER; Assistant Professor MOLBY.

The graduate courses offered by the Department lead to the A.M. and Ph.D. degrees.

The courses comprising the work of the first three years (thirty hours) in Physics, also courses in photography, general laboratory work, the teaching of physics and physical manipulation, modern physics, and analytical mechanics (altogether forty-two hours) will be found listed in the bulletin of the College of Liberal Arts, or in the University Catalog. The following courses are open to graduate students, and to such undergraduates as may be prepared to take them:

16. Spectroscopy. I, II. T.Th., at 2. (4 er.) Mr. RAMSEY.

18. Applied Electricity and Dynamo-Electric Machinery. I. Days and hours to be arranged. (3 er.) Mr. RAMSEY.

20. Electric Waves. II. T.Th., at 2. (2 er.) Mr. DUTCHER.

22. The Conduction of Electricity thru Gases, Radio-activity, Electron Theory. II. Days and hours to be arranged. (3 er.) Mr. RAMSEY.

29. Differential Equations in Physics. I. M.W.F., at 8. (3 er.) Mr. RAMSEY.

31. Thermodynamics. I. T.Th., at 8. (2 er.) Mr. MOLBY.

33. Physical Optics. I, II. T.Th., at 9. (4 er.) Mr. DUTCHER.

35. Advanced Mathematical Electricity. I, II. T.Th., at 9. (4 er.) Mr. RAMSEY.

37. Current Physical Literature. I, II. T.Th., at 10. (4 er.) Mr. FOLEY.

39. Advanced Theoretical Physics. I, II. T.Th., at 11. (4 er.) Mr. FOLEY, Mr. RAMSEY.

40. Advanced Laboratory Methods in Research. I, II. Days and hours to be appointed. Mr. FOLEY.

DEPARTMENT OF PHYSIOLOGY

Professor Moenhaus; Instructor Edmondson.

The following courses in the Department of Physiology are open to graduate students:

6. Advanced Physiology. I, II. Daily, at hours to be arranged. (Credit to be arranged.) Mr. MOENKHAUS.

10. Research. I, II. Daily, 8-4. Mr. MOENHAUS.
 11. Seminary. I, II. M., at 4. (2 cr.) Mr. MOENHAUS.

DEPARTMENT OF POLITICAL SCIENCE

Professor HERSHY; Associate Professor BATES; Lecturer LAPP.

The following courses are open to graduate students in the Department:

5. Municipal Government. I. M.W.F., at 10. (3 er.) Mr. BATES.
 7. Legislatures and Legislation. I. M.W.F., at 8. (3 er.) Mr. BATES.] Omitted in 1917-18. Given in alternate years with 8.
 8. Public Administration. I. M.W.F., at 8. (3 er.) Mr. BATES.
 9. Social Polities. II. M.W.F., at 8. (3 er.) Mr. BATES.
 11. Political Theory. II. T.Th., at 11. (2 er.) Mr. HERSHY.
 12. Problems of American Foreign Policy. M.W.F., at 10. (3 er.) Mr. HERSHY.
 13. International Relations. (a) Present-Day Europe. (b) The Far East. I, II. M.W.F., at 11. (6 er.) Mr. HERSHY.
 15. Public International Law. I, II. T.Th., at 1. (4 er.) Mr. HERSHY.
 16. Training for Public Service. I, II. Hours by arrangement. Mr. BATES, Mr. LAPP.
 17. Constitutions and Constitution-Making. Hours by arrangement. Mr. LAPP.
 21. Seminary in Government. I, II. Hours by arrangement. Mr. BATES.
 22. Seminary in International Law and Diplomacy. I, II. Hours and credit by arrangement. Mr. HERSHY.

DEPARTMENT OF ROMANCE LANGUAGES

Professor KUERSTEINER; Associate Professors MORRIS, MOSEMILLER, and HILL.

The Department of Romance Languages offers one year of graduate work, leading to the degree of Master of Arts.

Following are the courses in the Department open to graduate students:

Courses in French

7. Seventeenth Century Poetry and Drama. I, II. M.W.F., at 9. (6 er.) Mr. KUERSTEINER.] Omitted in 1917-18. Courses 7 and 24 are given in alternate years.
 24. Eighteenth Century Poetry and Drama. I, II. M.W.F., at 9. (6 er.) Mr. KUERSTEINER.
 10. Nineteenth Century: The Romantic Period. I, II. M.W.F., at 10. (6 er.) Mr. MORRIS.

- [27. Nineteenth Century: The Realistic Period. I, II. M.W.F., at 10. (6 cr.) Mr. MORRIS.]
 Omitted in 1917-18. Courses 10 and 27 are given in alternate years.
32. Contemporary Fiction. I, II. T.Th., at 10. (4 cr.) Mr. MORRIS.
- [33. Contemporary Drama. I, II. T.Th., at 10. (4 cr.) Mr. MORRIS.]
 Omitted in 1917-18. Courses 32 and 33 are given in alternate years.
26. Third-Year Composition. Conducted in French. I, II. T.Th., at 9. (4 cr.) Mr. MOSE MILLER.
28. Fourth-Year Composition. Intended especially for those who expect to teach French. Conducted in French. I, II. T.Th., at 2. (4 cr.) Mr. MOSE MILLER.

Other Courses

36. Third-Year Spanish Composition. I, II. T.Th., at 10. (4 cr.) Mr. HILL.
37. Nineteenth Century: The Spanish Novel. I, II. M.W.F., at 10. (6 cr.) Mr. KUERSTEINER.
38. Cervantes: 'Don Quixote'. I, II. Hours to be arranged. (2 cr.) Mr. HILL.
13. Old French. I, II. M.W.F., at 2. (6 cr.) Mr. MOSE MILLER.
35. Vulgar Latin. I, II. M.W.F., at 2. (6 cr.) Mr. MOSE MILLER.

DEPARTMENT OF SOCIAL SERVICE

Director HENRY.

The Department is prepared to offer opportunities in research leading to the A.M. and Ph.D. degrees. All of the work must be done in Indianapolis, but is subject otherwise to the rules which govern all graduate work.

Study may follow practical, statistical, or scientific lines, but must include a thesis embodying original investigation.

20. Research. Study of statistics and information gathered by the Department; or of conditions, in any part of the State, discovered in its work. I, II. Hours to be arranged. Miss HENRY.

DEPARTMENT OF ZOOLOGY

Professor EIGENMANN; Associate Professor PAYNE; Assistant Professor SCOTT; Instructör HOGE.

All work in the Department during the summer is done at the Biological Station, Winona Lake, Indiana.

Following are the courses open to graduate students in the Department:

30. Advanced Zoölogy. Individual work. I, II. Daily, 8-4.
 Mr. EIGENMANN, Mr. PAYNE, Mr. SCOTT, Miss HOGE.

31. General Biological Problems. II. M.W.F., at 9. Mr. EIGENMANN.
 32. Genetics. II. Th., at 9. Miss HOGE.
 50. Seminary. I, II. M., at 4. Mr. PAYNE.
 60. Research. I, II.
 Mr. EIGENMANN, Mr. PAYNE, Mr. SCOTT, Miss HOGE.

SCHOOL OF EDUCATION

Professors SMITH, BLACK, BOOK,* and LEONARD; Associate Professor CHILDS,†

Graduate work is offered in the School of Education, and special programs leading to the A.M. and Ph.D. degrees, with the Master's and Doctor's certificate in Education, will be arranged on application.

A student whose undergraduate major was in the College of Liberal Arts will usually be given opportunity to do in one year the work for the A.M. degree in Education. The work will include such undergraduate courses in Education as may be necessary as a basis for the graduate work.

The courses of the summer sessions are so arranged that graduate students in Education may complete the work for the Master's degree in summer sessions.

Graduate students in Education may, by special arrangement, complete the work for two-thirds of a semester in the Summer session of 1917 by remaining until August 24.

Following are the courses open to graduate students in the School:

6. History of Education. I, II. M.W.F., at 9. (6 cr.) Mr. CHILDS.

10. Philosophy of Education. I, II. M.W.F., at 10. (6 cr.) Mr. BLACK.

15. School Administration. I, II. M.W.F., at 9. (6 cr.) Mr. SMITH.

17a. Mental Development. Given in conjunction with Philosophy 33.
I. M.W.F., at 11. (3 cr.) Mr. BOOK.

17b. Psychology of Learning and of Work. Given in connection with
Philosophy 40. II. M.W.F., at 11. (3 cr.) Mr. BOOK.

9. Measurement of Intelligence. I, II. T.Th., at 9. (4 cr.)
Mr. BOOK.

19. Rural Education. I, II. M.W.F., at 9. (6 cr.) Mr. BLACK.

20. The Theory and Administration of Vocational Education. I, II.
M.W.F., at 8. (6 cr.) Mr. LEONARD.

21. Vocational Guidance. I, II. T.Th., at 8. (4 cr.) Mr. LEONARD.

22. Vocational Surveys. Designed for superintendents, principals, and
directors of vocational education. I, II. M.W.F., at 9. (6 cr.)
Mr. LEONARD.

*Absent on leave during First semester, 1916-17.

[†]Absent on leave during Second semester, 1916-17.

- 16B. Seminary in School Administration. I. M., at 4. Mr. SMITH.
- 16C. Seminary in Elementary Education. The topic for discussion will be the Pedagogy of the Bible. I. M., 4-6. Mr. BLACK.
- 16D. Seminary in Secondary Education. I. T., 7-9. Mr. CHILDS.
- 18B. Research: School Administration. I, II. Hours to be arranged. Mr. SMITH.
- 18C. Research: Elementary Education. I, II. Hours to be arranged. Mr. BLACK.
- 18D. Research: Secondary Education. I, II. Hours to be arranged. Mr. CHILDS.
- 18E. Research: Educational Psychology. I, II. Hours to be arranged. Mr. BOOK.
- 18F. Research: Vocational Education. I, II. Hours to be arranged. Mr. LEONARD.
23. Educational Measurements. II. T.Th., at 9. Mr. SMITH.

Students in Graduate School, 1916-17

*The following list includes all graduate students who were in attendance in the Summer session of 1916, and the First and Second semesters of 1916-17. These sessions are indicated by "s", "1", "2", respectively. A star prefixed to the year of graduation indicates that the student completed his A.B. work at the end of the First semester and was enrolled in the Graduate School at the beginning of the Second semester, altho the A.B. diploma will not be conferred until the Commencement of 1917.

- Anderson, Flora Charlotte (1,2) *Botany* Crawfordsville.
A.B., Indiana University, 1914.
- Anderson, Fred Norman (s) *History* French Lick.
A.B., Indiana University, 1913; A.M., 1915.
- Armstrong, Robert Douglas (s) *Political Science* Indianapolis.
A.B., Indiana University, 1915.
- Atkinson, Dayton Clifford (s) *Physics* Bloomington.
A.B., Indiana University, 1915.
- Azarraga, Francisco (1,2) *Philosophy* Calibo, Capiz, P.I.
A.B., Colegio de San Beda, 1911.
- Bailey, Warren Grant (1,2) *Econ. and Soc.* Indianapolis.
A.B., Indiana Central University, 1914.
- Ballinger, Jessie Flae (s,1) *Education* Upland.
A.B., Indiana University, 1913.
- Barnes, George Ivan (s) *Zoölogy* Bloomington.
A.B., Indiana University, 1915.
- Bays, John Andrew (s) *Education* Rockport.
A.B., Wabash College, 1908.
- Beebe, Ralph Edwin (s) *English* Warsaw.
A.B., Winona College, 1913; A.M., Indiana University, 1916.
- Bechtel, Floyd Eldon (s,1,2) *Botany* Bloomington.
A.B., Indiana Central University, 1912.
- Bell, (Mrs.) Gertrude Sumption (s) *Education* Bloomington.
A.B., Indiana University, 1916.
- Benekart, Margaret Nold (s,1,2) *English* Bloomington.
A.B., Indiana University, 1913.
- Bennett, Orval (s,1,2) *Econ. and Soc.* Indianapolis.
A.B., Indiana University, 1915; A.M., 1916.
- Bentley, (Mrs.) Bonnie Morbley (s) *History* New Albany.
A.B., Indiana University, 1916.
- Blank, Ralph John (s,1) *History* West Newton.
A.B., Indiana University, 1915; A.M., 1916.
- Blew, Michael James (1,2) *Chemistry* Bloomington.
A.B., Indiana University, 1915; A.M., 1916.
- Bolser, Claude M (1) *Philosophy* Bloomington.
A.B., Indiana University, 1914.
- Boruff, Glenn Tourner (s) *Chemistry* Bloomington.
A.B., Indiana University, 1916.
- Boss, Charles A (s) *Education* Avilla.
B.S., B.Pd., Tri-State College, 1914.
- Bourn, Frederick Edward (s) *Education* Stilesville.
A.B., Indiana University, 1911.
- Breeze, Frederick John (1,2) *Geology* Bloomington.
B.S., Purdue University, 1910; M.S., 1912.
- Brosey, Charles Lee (s,1,2) *Physics* Union City.
A.B., Indiana University, 1915.
- Browning, Sarah Claudia (s) *English* Elkhart.
A.B., Indiana University, 1916.

- Bryan, Maude Esther (s) *Latin* Bloomington.
 A.B., Indiana University, 1914.
- Cauble, Christopher Columbus (s) . *Education* Clayton.
 A.B., Indiana University, 1910.
- Childs, (Mrs.) Laura Goff (s,1) *English* Bloomington.
 A.B., Indiana University, 1915.
- Clark, Anna Rebecca (s) *Mathematics* Milligan.
 A.B., Indiana University, 1915.
- Clark, Reeta (s) *Education* Clark's Hill.
 A.B., Hiram College, 1913.
- Cleland, Ethel (1) *Political Science* Indianapolis.
 A.B., Butler College, 1915.
- Cook, Charles Edward (s) *Education* Wanatah.
 A.B., Indiana University, 1913.
- Coleman, James Melville (1,2) *Philosophy* Bloomington.
 A.B., University of Michigan, 1891; A.M., 1892.
- Coleman, Margaret Faith (1,2) *English* Bloomington.
 A.B., Indiana University, 1915.
- Cook, Guy Thomas (2) *Econ. and Soc.* Solsberry.
 A.B., Indiana University, *1917.
- Conover, Milton (1) *Political Science* Harrisonville, N. J.
 Ph.B., Dickinson College, 1913; A.M., University of Minnesota, 1915.
- Cowan, James Maxwell (1,2) *English* Dickson, Tenn.
 A.B., Vanderbilt University, 1914; A.M., Indiana University, 1916.
- Cox, David Clarke (s) *Chemistry* Madison.
 A.B., Hanover College, 1916.
- Crampton, Charles J (s) *Philosophy* Bloomington.
 A.B., Indiana University, 1914.
- Craven, Nellie Pearl (1,2) *Latin* Nineveh.
 A.B., Indiana University, 1911.
- Curry, Claude Allen (1,2) *Anatomy* Farmersburg.
 A.B., Indiana University, 1916.
- Dame, Mary Ruth (s) *English* Monon.
 A.B., Franklin College, 1912.
- Davisson, Lillian Luey (1,2) *Romance Lang.* Bloomington.
 A.B., Indiana University, 1916.
- Day, Edwina Elizabeth (s) *English* Bedford.
 A.B., Indiana University, 1915.
- Demaree, Elizabeth Lucile (s) *English* Bloomington.
 A.B., Indiana University, 1906.
- Deputy, Francis Myrl (s) *Biology* Franklin.
 B.S., Franklin College, 1915.
- Driver, Charles S (1,2) *Zoölogy* Meyer's Cove, Va.
 A.B., Bridgewater College, 1916.
- Dryden, Ethel May (1,2) *English* Columbus.
 A.B., Toronto University, 1915.
- Dunn, Alice Lucille (1,2) *Romance Lang.* Indianapolis.
 A.B., Butler College, 1916.
- Eades, Henry Drury (1,2) *English* Evansville.
 A.B., Southern Normal College, 1905.
- Easley, Katherine (1) *English* New Albany.
 A.B., Indiana University, 1912; A.M., 1913.
- Edmondson, (Mrs.) Edna Hatfield (1) *Econ. and Soc.* Bloomington.
 A.B., Indiana University, 1911; A.M., 1914.
- Edmondson, Paul Layton (s) *Education* Bloomfield.
 A.B., Indiana University, 1913.
- Edwards, Elmer Horace (s) *Education* Clark's Hill.
 A.B., Indiana University, 1911.
- Edwards, Florence Ethelyn (s) *English* Oakland City.
 A.B., Indiana University, 1910.
- Eigenmann, Charlotte Elizabeth (1,2) Bloomington.
 A.B., Stanford University, 1915.
- Ellis, Thomas Finley (s,1,2) *Econ. and Soc.* Valparaiso.
 A.B., Valparaiso University, 1914; A.M., Indiana University, 1916.

- Enochs, Rex Paul (s) *Education* Terre Haute.
 A.B., Indiana University, 1915.
- Faris, Violet Martha (s,1,2) *English* Bloomington.
 A.B., Indiana University, 1910.
- Finley, Georgia Elizabeth (2) *Home Economics* Bloomington.
 B.S., Lewis Institute, 1913.
- Folger, Harry Thomas (2) *Zoölogy* Columbus.
 A.B., Indiana University, *1917.
- Foote, Helen Christine (s) *English* Indianapolis.
 A.B., Indiana University, 1912; A.M., 1916.
- Forry, Frank (2) *German* Bloomington.
 A.B., DePauw University, 1910.
- Froemming, Albert Henry (s,1,2) *Zoölogy* Bloomington.
 A.B., Indiana University, 1915.
- Goldsmith, (Mrs.) Amy Houchin (2) *Zoölogy* Oakland City.
 A.B., Indiana University, 1916.
- Goldsmith, William Marion (s,1,2) *Zoölogy* Oakland City.
 A.B., Hillsdale College, 1913; A.M., Indiana University, 1915.
- Good, James Blaine (s) *History* Indianapolis.
 A.B., Indiana University, 1916.
- Goss, (Mrs.) Alice Diven (s) *German* Bloomington.
 A.B., Indiana University, 1908; A.M., 1912.
- Graham, Una Arline (s) *English* Elkhart.
 A.B., Indiana University, 1915.
- Graves, Orville Melvin (s) *Zoölogy* Ft. Branch.
 A.B., DePauw University, 1915.
- Gray, Wella Jean (s) *History* New Town.
 A.B., Indiana University, 1915.
- Gregory, Mabel Hanna (1,2) *English* Bloomington.
 A.B., Indiana University, 1912.
- Grissom, Allan Wilson (1,2) *English* Unionville.
 A.B., Indiana University, 1914.
- Grossnickle, Russell L (s,1,2) *Mathematics* North Manchester.
 A.B., Manchester College, 1915.
- Guthrie, Bessie Alma (s) *Latin* Bloomington.
 A.B., Indiana University, 1916.
- Guthrie, Francis Clarke (s,1,2) *Physiology* Edinburg.
 A.B., DePauw University, 1915.
- Hale, George Clyde (1,2) *Chemistry* Dugger.
 A.B., A.M., Indiana University, 1915.
- Hanger, Bertha Lucinda (1,2) *Botany* Scottsburg.
 A.B., Indiana University, 1913.
- Hansford, Hazel (1) *Philosophy* Bloomington.
 A.B., Indiana University, 1913.
- Hao, Tso Chang (s) *Econ. and Soc.* Wachinghsin, China.
 A.B., University of Illinois, 1916.
- Harmon, Paul Montgomery (s,1,2) *Physiology* Bloomington.
 A.B., Indiana University, 1914; A.M., 1915.
- Hart, Agnes Fay (s,2) *Latin* Bloomington.
 A.B., Indiana University, 1914; A.M., 1916.
- Hemmer, Edwin John (s,1,2) *Botany* Somerville.
 A.B., Indiana State Normal, 1914.
- Hendershot, Wilfred Glenn (s) *Mathematics* Spencer.
 A.B., Indiana University, 1915.
- Henry, Edna Gertrude (1,2) *Econ. and Soc.* Indianapolis.
 A.B., Indiana University, 1897; A.M., 1914.
- Hepburn, Samuel Benedict (s,2) *History* Bloomington.
 A.B., Indiana University, 1915; A.M., 1916.
- Hess, John Ambrose (s,1,2) *German* Bloomington.
 A.B., Kansas University, 1908; A.M., 1910.
- Hickman, Lucian Grover (s,1,2) *Education* Patriot.
 A.B., Indiana University, 1916.

- Hightower, Pleasant Roseoe (s,1,2). *English*. Bloomington.
 A.B., Indiana Central University, 1914.
- Hire, Charles (1,2) *Physics*. Columbia City.
 A.B., Indiana University, 1915.
- Hisey, Walter Edwin (s) *Education*. Corydon.
 A.B., Indiana University, 1912.
- Hoffman, Daphne Margarita (s,1,2) *Romance Lang.*. Bloomington.
 A.B., Indiana University, 1912; A.M., Wellesley College, 1913.
- Hornung, Howard Vineent (s) *Political Science*. Clinton.
 A.B., Indiana University, 1914.
- Howard, Inez Eulalia (1,2) *Latin*. Lincoln.
 A.B., Indiana University, 1914.
- Hunter, Maud (1) *English*. Lyons.
 A.B., Indiana University, 1916.
- Hutchinson, James Emory (s) *Zoölogy*. Norman Station.
 A.B., Indiana University, 1916.
- Hutchinson, Robert Orland (s) *Physics*. Norman Station.
 A.B., Indiana University, 1914.
- Hyslop, George Hall (s) *Philosophy*. Indianapolis.
 A.B., Indiana University, 1913; A.M., 1914.
- Inman, Ora Homer (s) *English*. Bloomington.
 A.B., Indiana University, 1915.
- James, Vern (s) *Mathematics*. Bloomington.
 A.B., Indiana University, 1912; A.M., Columbia University, 1916.
- Job, Leonard Bliss (s) *Education*. Roachdale.
 A.B., Indiana University, 1915.
- Johnson, Waylan Eugene (1,2) *Comp. Philol.*. Valparaiso.
 A.B., Valparaiso University, 1915.
- Johnston, Eugene Hinrichsen (s) *English*. Bloomington.
 A.B., Indiana University, 1914.
- Jones, Walter Bower (1) *Chemistry*. Kokomo.
 A.B., Indiana University, 1914.
- Jordan, Jacob (s) *Physics*. Corydon.
 A.B., Indiana University, 1914.
- Jourdan, Florence Helen (1,2) *English*. Evansville.
 A.B., Indiana University, 1916.
- Keck, John Hamilton (2) *Geology*. Bloomington.
 A.B., Indiana University, 1911.
- Kempf, Gerald Fidelis (1) *Chemistry*. Bloomington.
 A.B., Indiana University, 1916.
- Kester, Kathryn Mary (s,2) *English*. Terre Haute.
 A.B., Indiana State Normal, 1915.
- Ketcham, Lilla McDonald (1,2) *English*. Indianapolis.
 A.B., Lake Erie College, 1905; A.M., University of Chicago, 1907.
- Kidwell, Edna (2) *English*. Portland.
 A.B., Indiana University, 1909.
- Kincaid, Grace Imogene (s) *English*. Franklin.
 A.B., Franklin College, 1912.
- Kincaid, Mary Ellen (s) *English*. Franklin.
 A.B., Franklin College, 1914.
- King, Elsie (1,2) *English*. Union City.
 A.B., Indiana University, 1916.
- Kinman, Olentice (1,2) *English*. Bloomington.
 A.B., Indiana University, 1916.
- Knapp, Martha Winifred (2) *English*. Bloomington.
 A.B., Ohio Wesleyan University, 1903.
- Kodera, Yoshikazu (1,2) *Econ. and Soc.*. Kobe, Japan.
 B.C.S., Kwansei Gakuen College, Kobe, Japan.
- Kraschin, Walter (1,2) *German*. Valparaiso.
 A.B., Valparaiso University, 1915.
- Kratli, William Frank (s) *Education*. Knox.
 A.B., Indiana University, 1909.

Laughlin, Butler (s,1)	<i>Education</i>	Robison.
A.B., Indiana University, 1914.		
Line, Sarah Jane	<i>English</i>	Marion.
A.B., Indiana University, 1916.		
Line, Talitha Eleanor (1,2)	<i>English</i>	Marion.
A.B., Indiana University, 1914.		
Loudermill, Joseph J (1,2)	<i>Chemistry</i>	Waveland.
A.B., Wabash College, 1915.		
Loury, Ethel (s)	<i>English</i>	North Vernon.
A.B., Indiana University, 1915.		
Luce, Leonard Monroe (s)	<i>Mathematics</i>	McCordsville.
A.B., Indiana University, 1906; A.M., 1916.		
Lynn, Laura Effie (2)	<i>English</i>	Wabash.
A.B., Indiana University, 1915.		
Lyon, Florence (1)	<i>Romance Lang.</i>	Bloomington.
A.B., Indiana University, 1916.		
McAfee, George Ellsworth (s)	<i>History</i>	Borden.
A.B., Indiana University, 1916.		
McClasky, Maude Anna (1,2)	<i>English</i>	Union City.
A.B., Indiana University, 1914.		
McCloskey, Mary Magdalene (1)	<i>English</i>	Bloomington.
A.B., Indiana University, 1912; A.M., 1913.		
McElhinney, Robert Stewart (1,2)	<i>English</i>	Bloomington.
A.B., Indiana University, 1912; A.M., 1915.		
McHenry, Hazel (s)	<i>Education</i>	Cambridge, Ohio.
B.S., Ohio State University, 1915.		
Malott, Burton Joseph (s)	<i>Geology</i>	North Vernon.
A.B., Indiana University, 1915.		
Malott, Clyde Arnett (1)	<i>Geology</i>	Bloomington.
A.B., Indiana University, 1913; A.M., 1915.		
Mann, Clarence Edward (s)	<i>Political Science</i>	Morristown.
A.B., Central Normal College, 1914.		
Mason, Ruby Elizabeth Campbell		
(1)	<i>English</i>	Bloomington.
A.B., University of Toronto, 1895; A.M., 1899.		
Mangel, Elmer Henry (s)	<i>Education</i>	Huntingburg.
A.B., Indiana University, 1910.		
Maurer, Will Frederick (s)	<i>German</i>	Mount Vernon.
A.B., Indiana University, 1916.		
Mayer, Esther Beatrice (1,2)	<i>English</i>	Bloomington.
A.B., Indiana University, 1916.		
Mebane, Daniel Bower (s,1,2)	<i>English</i>	Bloomington.
A.B., Indiana University, 1916.		
Menk, Edgar Allen (1,2)	<i>Latin</i>	Bloomington.
A.B., Indiana University, 1907.		
Meyer, Jacob C (1,2)	<i>Education</i>	Sterling, Ohio.
A.B., Goshen College, 1916.		
Meyer, Lee Albert (s)	<i>English</i>	Huntingburg.
A.B., Indiana University, 1913; A.M., 1916.		
Miles, Ruth (s)	<i>German</i>	Syracuse.
A.B., Butler College, 1915; A.M., Indiana University, 1916.		
Miller, Isaiah Leslie (1,2)	<i>Mathematics</i>	Bloomington.
A.B., Indiana University, 1915; A.M., 1916.		
Miller, (Mrs.) Olive Hughes (s)	<i>History</i>	Bloomington.
A.B., Indiana University, 1892; A.M., 1893.		
Miller, Zora Helen (s,1,2)	<i>History</i>	Bloomington.
A.B., Indiana University, 1904.		
Money, Charles Hendechy (s)	<i>History</i>	Bloomington.
A.B., Indiana University, 1916.		
Moore, Bruce Victor (s,1,2)	<i>Education</i>	Kokomo.
A.B., Indiana University, 1914.		
Morgan, Raymond (s,1,2)	<i>Physics</i>	Centerville.
A.B., Indiana University, 1916.		

- Morland, John Wallace (s,1,2) *History* Terre Haute.
 A.B., Indiana University, 1916.
- Morrison, Olin D (s,1,2) *History* Burkett.
 A.B., Wabash College, 1915.
- Mueller, Johanna Caroline (1,2) *German* Indianapolis.
 A.B., Butler College, 1916.
- Murphy, Maurice Elzin (s) *Econ. and Soc.* Clayton.
 A.B., Indiana University, 1913; A.M., University of Illinois, 1916.
- Nelson, Dotson McGinnis (s) *Physics* Clinton, Miss.
 B.S., Mississippi College, 1907.
- Nicholson, Thomas Edward (1,2) *Philosophy* Bloomington.
 A.B., Indiana University, 1915; A.M., 1916.
- Nothnagel, Mildred (1,2) *Botany* Chicago, Ill.
 A.B., Indiana University, 1913; M.S., University of Chicago, 1915.
- Odell, Charles Watters (s,1,2) *Education* Bloomington.
 A.B., DePauw University, 1911; A.M., 1912.
- Orahood, Charles Harold (s) *Geology* Kingman.
 A.B., Indiana University, 1912.
- Orvis, Mary Burchard (s) *English* Madison, Wis.
 A.B., University of Wisconsin, 1907.
- Painter, Carl Franklin (s) *History* Middleton.
 A.B., Indiana University, 1915.
- Papish, Jacob (1,2) *Chemistry* Bloomington.
 B.S., Valparaiso University, 1910.
- Peckinpaugh, Earl M (s) *English* Bloomington.
 A.B., Indiana University, 1916.
- Pflueger, Luther Appel (1,2) *German* Bloomington.
 A.B., Muhlenburg College, 1906; A.M., Indiana University, 1913.
- Piercey, Joseph William (s,1) *English* Bloomington.
 A.B., DePauw University, 1913.
- Pittenger, (Mrs.) Bess Williams
 (s,1,2) *History* Bloomington.
 A.B., Indiana University, 1914.
- Pocock, Ina Moseitus (s) *Latin* Orland.
 A.B., Indiana University, 1913.
- Polk, Omer Eli (s) *Education* Austin.
 A.B., Indiana University, 1916.
- Powell, Joseph Edgar (2) *Chemistry* Jacksonville.
 A.B., Indiana University, *1917.
- Prichard, Walter (s) *History* Edinburg.
 A.B., Indiana University, 1914; A.M., 1915.
- Ramsey, Earl E (s) *Education* Bloomington.
 A.B., Indiana University, 1904; A.M., 1910.
- Reeves, Lillian Irene (s) *English* Bloomington.
 A.B., Indiana University, 1915.
- Ratliff, William Clarence (1) *Chemistry* Marion.
 A.B., Indiana University, 1916.
- Rice, Thurman B (s,2) *Zoölogy* La Fontaine.
 A.B., Indiana University, 1914.
- Risely, Lee Harrison, (s) *English* Velpen.
 A.B., Indiana University, 1912.
- Rymer, (Mrs.) Helen Hope (2) *English* Bloomington.
 A.B., Miami University, 1910.
- Sayers, Ephraim Vern (s) *Education* Bloomington.
 A.B., Indiana University, 1914.
- Shanks, Topen (s) *English* Portland.
 A.B., Indiana University, 1913.
- Shannon, Fred Albert (s) *History* Brazil.
 A.B., Indiana State Normal, 1914.
- Sheekell, Oliver Morton (s) *Education* Bloomington.
 A.B., Indiana University, 1913.
- Shock, Joseph Henry (s) *Education* Lafayette.
 A.B., Indiana University, 1902.

- Sigler, Richard Roberts (1,2) *Physiology* New Salisbury.
 A.B., Indiana State Normal, 1916.
- Smith, Jessie Agnes (2) *Romance Lang.* Bloomington.
 A.B., Indiana University, 1900.
- Smith, (Mrs.) Johnnie Rutland
 (1,2) *English* Bloomington.
 A.B., Florida State College, 1908.
- Smock, Florence Louise (s) *English* Southport.
 A.B., Butler College, 1913.
- Soupart, Sylvia Josephine (1) *English* Lafayette.
 A.B., Indiana University, 1909.
- Spears, Clarence Louis (2) *History* Bloomington.
 A.B., Indiana University,* 1917.
- Spitler, Orla Ray (s) *Mathematics* Salamonia.
 A.B., Indiana University, 1916.
- Sprague, Paul Stracey (2) *History* Crawfordsville.
 A.B., Indiana University,* 1917.
- Steele, George Renwick (1) *Philosophy* Bloomington.
 Ph.B., Grove City College, 1901.
- Steele, Herd Cleveland (s) *Chemistry* Clinton, Miss.
 B.S., Mississippi College, 1910.
- Stempel, (Mrs.) Myrtle Emmert
 (1,2) *Comp. Philol.* Bloomington.
 A.B., Indiana University, 1902; A.M., 1915.
- Stephens, Mabel Elizabeth (1,2) *Latin* Marion.
 A.B., Indiana University, 1916.
- Stewart, Ernest Dale (1,2) *History* Dupont.
 A.B., Indiana University, 1916.
- Strow, Carl William (1,2) *Econ. and Soc.* Auburn.
 A.B., Indiana University, 1916.
- Summers, Grover (1,2) *History* Greentown.
 A.B., Indiana State Normal, 1912.
- Sutherland, Sarah Augusta (1) *Home Economics* Madison, Wis.
 B.S., University of Wisconsin, 1910.
- Swartz, Walter Johann (1,2) *Latin and Greek* Chicago, Ill.
 A.B., William Jewell College, 1912; A.M., Chicago University, 1913.
- Tarter, Elmer Ellsworth (s) *Education* Arlington, Ky.
 A.B., University of Kentucky, 1913.
- Telfer, Robert Stockdale (s) *English* Bloomington.
 A.B., Wesleyan University, 1913; A.M., Indiana University, 1916.
- Telfer, William Adams (s) *English* Bloomington.
 A.B., Indiana University, 1910; A.M., 1916.
- Thompson, Hiner J (1) *Education* Bloomington.
 B.S., Central Normal College, 1910.
- Thompson, Lela Frances (1,2) *Econ. and Soc.* Frankfort.
 A.B., DePauw University, 1915.
- Tirey, Robert Milton (s) *Education* Mitchell.
 A.B., Indiana University, 1910.
- Townsend, Roy Weston (s) *Education* Matthews.
 A.B., Butler College, 1915.
- Tucker, William Motier (1) *Geology* Indianapolis.
 A.B., Indiana University, 1908; A.M., 1909; Ph.D., 1916.
- Tudor, Jennie Delia (s) *English* Bloomington.
 A.B., Indiana University, 1915.
- Turner, J Frank (2) *Mathematics* Bloomington
 B.S., Southern Normal School, 1916.
- Van Campen, Ethel Irene (1) *English* Jeffersonville.
 A.B., Indiana University, 1915.
- Wallance, Leona Henrietta (s) *History* Franklin.
 A.B., Franklin College, 1914.
- Warren, Don Cameron (s,1,2) *Zoölogy* Saratoga.
 A.B., Indiana University, 1914.

Watson, Carl Gwartney (s)	<i>Physics</i>	Lafayette.
A.B., Indiana University, 1914.		
Weatherwax, Lewis Estel (1,2)	<i>Education</i>	Coal City.
A.B., Indiana University, 1910; A.M., 1915.		
Weatherwax, Paul (2)	<i>Botany</i>	Bloomington.
A.B., Indiana University, 1914; A.M., 1915.		
Weaver, (Mrs.) Elnora Kauffman (s)	<i>History</i>	Goshen.
A.B., Goshen College, 1913; A.M., Indiana University, 1916.		
Weaver, John E (s)	<i>Mathematics</i>	Goshen.
A.B., Goshen College, 1914; A.M., Indiana University, 1916.		
Wellons, Blanche (s)	<i>English</i>	Bloomington.
A.B., Indiana University, 1914.		
Weybright, Iva Marie (s)	<i>English</i>	Bloomington.
A.B., Indiana University, 1914.		
Whinery, Smiley M (1,2)	<i>Education</i>	Warren.
A.B., Indiana University, 1916.		
White, Cecile Woodard (1,2)	<i>Philosophy</i>	Bloomington.
A.B., Indiana University, 1913; A.M., 1915.		
White, Roy Louis (s,1,2)	<i>Education</i>	Georgetown.
A.B., Indiana University, 1915.		
Williams, Fannie Gertrude (s)	<i>English</i>	Bloomfield.
A.B., Indiana University, 1912.		
Winchester, Clyde McClellan (s)	<i>Chemistry</i>	Edinburg.
B.S., Franklin College, 1915.		
Winters, Matthew (1,2)	<i>Anatomy</i>	Poseyville.
A.B., Indiana University, 1915.		
Winterrowd, Bertha Olga (s)	<i>Mathematics</i>	Flat Rock.
B.S., Franklin College, 1912.		
Winterrowd, Effie May (s)	<i>Mathematics</i>	Flat Rock.
A.B., Franklin College, 1916.		
Wolfe, Harold Eichholtz (1,2)	<i>Mathematics</i>	Manchester.
A.B., Indiana University, 1913; A.M., 1914.		
Wright, Emerson Blaine (s,1)	<i>Education</i>	Bloomington.
A.B., Indiana University, 1913.		
Ziegler, Lloyd Hiram (s,1,2)	<i>Philosophy</i>	Bippus.
A.B., Indiana University, 1914; A.M., 1916.		
Zimmerman, Charles (s)	<i>History</i>	North Vernon.
A.B., Indiana State Normal, 1912; A.M., Indiana University, 1916.		
Zimmerman, Everett Edward (s,1,2)	<i>Physics</i>	Farmland.
A.B., Indiana University, 1916.		

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1918/19

Vol. XVI
No. 5

INDIANA UNIVERSITY BULLETIN
(OFFICIAL SERIES)

{ April 15
1918

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INDIANA UNIVERSITY GRADUATE SCHOOL



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Announcements, 1918-19

1918

APRIL							MAY							JUNE						
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27	28	29	30				25	26	27	28	29	30	31	29	30					

Session days of First and Second semesters in bold faced figures. Days of Summer session, 1918 (except *special* schedules of the School of Education, of the School of Medicine, the School of Law, and of the Biological Station), are in italic.

University Calendar

SUMMER SESSION, 1918

June 13, Thursday.	Registration and enrollment in classes.
June 14, Friday.	Recitations and lectures begin.
August 9, Friday, 5:00 p.m.	Summer session ends.

* * * SPECIAL SCHEDULES OF THE SCHOOL OF EDUCATION.—Courses for Class A and Class B teachers begin Monday, June 10, and end Friday, August 23 (including 5 Saturdays). Classes are held on the following Saturdays: July 13, 20, August 3, 10, 17. Research courses continue from the opening of the Summer session until August 23 (including 4 Saturdays).

SCHOOL OF LAW.—Courses begin June 10 and end August 23. After July 22, instruction is given six days a week.

SCHOOL OF MEDICINE.—Courses at Bloomington begin June 10, and end August 31. At Indianapolis dispensary courses continue thruout the summer. Other courses begin June 10 and July 22, and continue six weeks.

BIOLOGICAL STATION (at Winona Lake, Ind.)—Opens Saturday, June 15, and closes Friday, August 16. First half closes July 20, and second half begins July 13.

REGULAR SESSION, 1918-19

FIRST SEMESTER

Sept. 16 and 17, Monday and Tuesday.	Matriculation and registration; examinations for admission.
September 17, Tuesday.	Enrollment in classes.
September 18, Wednesday.	Recitations and lectures begin.
Nov. 28 and 29, Thursday and Friday.	Thanksgiving recess.
December 20 to January 1.	Christmas recess.
January 2, Thursday, 8:00 a.m.	Work resumed.
January 20, Monday.	Foundation Day: a holiday.
January 24, Friday.	Final examinations begin.
February 1, Saturday, 5:00 p.m.	First semester ends.

SECOND SEMESTER

Feb. 1, 3, Saturday and Monday.	Matriculation and registration.
February 3, Monday.	Enrollment in classes.
February 4, Tuesday.	Recitations and lectures begin.
March 31, Monday.	Enrollment of Class B students.
April 3, Thursday, 12 m.	Spring vacation begins.
April 8, Tuesday, 8:00 a.m.	Work resumed.
April 8, Tuesday.	Enrollment for spring half-semester.
May 29, Thursday.	Final examinations begin.
May 30, Friday.	Memorial Day: a holiday.
June 7, Saturday, 5:00 p.m.	Second semester ends.
June 11, Wednesday.	Commencement.

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Prefatory Note

INDIANA UNIVERSITY is the State University of Indiana, and the head of the public school system of the state. It takes its origin from the State Seminary, which was established by act of the legislature, approved January 20, 1820. In 1828 the title of the Seminary was changed by the legislature to that of the Indiana College, and in 1838 the University was given its present name. In 1867 Indiana University became coeducational.

The University comprises the following schools:

- The College of Liberal Arts, founded as the Indiana Seminary in 1820.
- The School of Law, organized in 1842 and reorganized in 1889.
- The School of Medicine, organized in 1903, and reorganized in 1908.
- The Training School for Nurses, established in the fall of 1914.
- The Graduate School, organized in 1904.
- The School of Education, organized in 1908.
- The Extension Division, organized in 1912.
- The Summer Session, organized in 1890, reorganized in 1900.

The first advanced degrees conferred for graduate work were granted in 1882. In 1904, there took place the segregation and formal organization of the Graduate School, and in 1908 the office of Dean of the Graduate School was created.

This number of the *Bulletin* is devoted to setting forth the facilities for graduate work in the several departments of the University. The attention of graduates of other Indiana colleges is invited to the announcement on page 14, of ten scholarships established by the Board of Trustees for such students. The value of these scholarships is \$200 each; they also carry with them exemption from Contingent, Library, and regular laboratory fees. For further information concerning the Graduate School, address,

THE DEAN OF THE GRADUATE SCHOOL,
Bloomington, Indiana.

Officers and Faculty of the Graduate School

GRADUATE COUNCIL

- CARL H EIGENMANN, Ph.D., Dean of the Graduate School, and Professor of Zoölogy.
- JAMES ALBERT WOODBURN, Ph.D., LL.D., Professor of American History.
- ROBERT EDWARD LYONS, Ph.D., Professor of Chemistry.
- ARTHUR LEE FOLEY, Ph.D., Professor of Physics, and Waterman Research Professor, 1917-18.
- DAVID MYERS MOTTIER, Ph.D., Professor of Botany.
- ULYSSES GRANT WEATHERLY, Ph.D., Litt.D., Professor of Economics and Sociology.
- BURTON DORR MYERS, A.M., M.D., Secretary of the School of Medicine at Bloomington, and Professor of Anatomy.
- BERT JOHN VOS, Ph.D., Professor of German.
- DAVID ANDREW ROTHROCK, Ph.D., Professor of Mathematics.
- WILLIAM J MOENKHAUS, Ph.D., Professor of Physiology.
- WILL DAVID HOWE, Ph.D., Professor of English.
- WILLIAM FREDERICK BOOK, Ph.D., Professor of Educational Psychology, and Director of the Psychological Laboratory.
- EDGAR ROSCOE CUMINGS, Ph.D., Professor of Geology.
- SELATIE EDGAR STOUT, Ph.D., Professor of Latin.
- HENRY LESTER SMITH, Ph.D., Dean of the School of Education, and Professor of School Administration.
- JOSEPH WILLIAM PIERCY, A.B., Professor of Journalism.
- GEORGE DAVIS MORRIS, Dr.d'Univ. (Paris), Associate Professor of French.
- FRANK WILLIAM TILDEN, A.M., Associate Professor of Greek.
- GUIDO HERMANN STEMPPEL, A.M., Associate Professor of Comparative Philology.
- WILBUR ADELMAN COGSHALL, A.M., Associate Professor of Astronomy.
- FRANK GREENE BATES, Ph.D., Associate Professor of Political Science, and Secretary of the Graduate Council.

FACULTY OF THE GRADUATE SCHOOL

- WILLIAM LOWE BRYAN, Ph.D., LL.D., President of the University.
- HORACE ADDISON HOFFMAN, A.M., Professor of Greek.
- JAMES ALBERT WOODBURN, Ph.D., LL.D., Professor of American History.
- *CARL H EIGENMANN, Ph.D., Professor of Zoölogy.
- ROBERT EDWARD LYONS, Ph.D., Professor of Chemistry.
- ARTHUR LEE FOLEY, Ph.D., Professor of Physics, and Waterman Research Professor, 1917-18.
- DAVID MYERS MOTTIER, Ph.D., Professor of Botany.

* Relieved of teaching duties from August 1, 1917, to August 1, 1918.

ULYSSES GRANT WEATHERLY, Ph.D., Litt.D., Professor of Economics and Sociology.

BURTON DORR MYERS, A.M., M.D., Professor of Anatomy.

*SAMUEL BANNISTER HARDING, Ph.D., Professor of European History.

AMOS SHARTLE HERSHHEY, Ph.D., Professor of Political Science and International Law.

BERT JOHN VOS, Ph.D., Professor of German.

WILLIAM A RAWLES, Ph.D., Professor of Political Economy.

CARL WILHELM FERDINAND OSTHAUS, A.M., Professor of German.

SCHUYLER COLFAX DAVISSON, Sc.D., Professor of Mathematics.

DAVID ANDREW ROTHROCK, Ph.D., Professor of Mathematics.

WILLIAM J MOENKHAUS, Ph.D., Professor of Physiology.

†LOUIS SHERMAN DAVIS, Ph.D., Professor of Chemistry.

ALFRED MANSFIELD BROOKS, A.M., Professor of Fine Arts.

WILL DAVID HOWE, Ph.D., Professor of English.

WILLIAM WESLEY BLACK, A.M., Professor of Elementary Education.

WILLIAM FREDERICK BOOK, Ph.D., Professor of Educational Psychology, and Director of the Psychological Laboratory.

CHARLES JACOB SEMBOWER, Ph.D., Professor of English.

EDGAR ROSCOE CUMINGS, Ph.D., Professor of Geology.

‡ROBERT JOSSELYN LEONARD, A.M., Professor of Vocational Education.

SELATIE EDGAR STOUT, Ph.D., Professor of Latin.

WILLIAM BAIRD ELKIN, Ph.D., Acting Professor of Philosophy.

JOSEPH WILLIAM PIERCY, A.B., Professor of Journalism.

HENRY LESTER SMITH, Ph.D., Dean of the School of Education, and Professor of School Administration.

JOSEPH ABRAHAM WILLIAMS, A.M., Acting Professor of Psychology.

GEORGE DAVIS MORRIS, Dr.d'U. (Paris), Associate Professor of French.

FRANK WILLIAM TILDEN, A.M., Associate Professor of Greek.

GUIDO HERMANN STEMPBEL, A.M., Associate Professor of Comparative Philology.

CHARLES ALFRED MOSEMILLER, A.B., Associate Professor of Romance Languages.

ROLLA ROY RAMSEY, Ph.D., Associate Professor of Physics.

OLIVER W BROWN, A.M., Associate Professor of Chemistry.

FRANK MARION ANDREWS, Ph.D., Associate Professor of Botany.

LILLIAN GAY BERRY, A.M., Associate Professor of Latin.

HENRY THEW STEPHENSON, B.S., A.B., Associate Professor of English.

WILBUR ADELMAN COGSHALL, A.M., Associate Professor of Astronomy.

ULYSSES SHERMAN HANNA, Ph.D., Associate Professor of Mathematics.

‡JOSHUA WILLIAM BEEDE, Ph.D., Associate Professor of Geology.

FRANK GREENE BATES, Ph.D., Associate Professor of Political Science.

FRANK CURRY MATHERS, Ph.D., Associate Professor of Chemistry.

CLARENCE EARL MAY, Ph.D., Associate Professor of Chemistry.

FERNANDUS PAYNE, Ph.D., Associate Professor of Zoölogy.

* Absent on leave in the government service from November 9, 1917, to end of academic year.

† Absent on leave during academic year, 1917-18.

- MABEL THACHER WELLMAN, A.B., Associate Professor of Home Economics.
- EDNA GERTRUDE HENRY, Ph.D., Director of Social Service (Indianapolis).
- HUBERT GUY CHILDS, A.M., Associate Professor of Education.
- JOHN BENJAMIN DUTCHER, Ph.D., Associate Professor of Physics.
- JOHN HILL, Ph.D., Associate Professor of Spanish.
- GEORGE FULLMER REYNOLDS, Ph.D., Associate Professor of English.
- PRESTON ALBERT BARBA, Ph.D., Associate Professor of German.
- WILLIAM NEWTON LOGAN, Ph.D., Associate Professor of Geology.
- GARLAND GREEVER, Ph.D., Associate Professor of English.
- JACOB A BADERTSCHER, Ph.D., Associate Professor of Anatomy.
- *JOHN BURTON PHILLIPS, Ph.D., Acting Associate Professor of Economics and Sociology.
- JAMES M VAN HOOK, A.M., Assistant Professor of Botany.
- WILL SCOTT, Ph.D., Assistant Professor of Zoölogy.
- ROBERT E BURKE, A.M., Assistant Professor of Fine Arts.
- FRED A MOLBY, Ph.D., Assistant Professor of Physics.
- ELIZABETH SAGE, B.S., Assistant Professor of Home Economics.
- ALBERT LUDWIG KOHLMEIER, A.M., Assistant Professor of History.
- †KENNETH POWERS WILLIAMS, Ph.D., Assistant Professor of Mathematics.
- JAMES GROVER McDONALD, A.M., Assistant Professor of History.
- JOHN AMBROSE HESS, A.M., Assistant Professor of German.
- FRANK C SENOUR, A.M., Assistant Professor of English.

* From December 1, 1917.

† Absent on leave in the military service.

General Statement

Purpose and Administration. The Graduate School furnishes opportunities for advanced work leading to careers in higher education and in certain lines of investigation. It does not offer work leading to professional degrees in law or in medicine.

The work of the School is a direct continuation of that of the College of Liberal Arts; and as such it is the most advanced work in education undertaken by the state.

The School is administered by the Council of the Graduate School, composed of members of the Faculty representing different fields of learning.

Admission. Students holding a Bachelor's degree in Arts, or in Science, from Indiana University, or the same degree, or its equivalent, from institutions of similar rank, are admitted to the Graduate School on presentation of satisfactory credentials, which should include a certificate of graduation and a transcript of the college record. Persons holding the Bachelor's degree from institutions whose requirements are considered to lack a year, or more, of being the equivalent of the A.B. degree from this institution, are not admitted to the Graduate School. They may enter the College of Liberal Arts and are referred to the Dean of the College for their standing. Holders of the A.B. degree, or its equivalent, from institutions whose requirements lack less than a year of being the equivalent of the A.B. degree from this institution may be admitted to the Graduate School. In such cases, work in addition to the minimum of thirty hours for the A.M. degree will be required. The amount will be determined in each case by the Council of the Graduate School. In all cases, the student must complete to the satisfaction of the department of the major subject the graduate work required in that department for the A.M. or the Ph.D. degree.

All graduate students will enroll at the beginning of each semester, and those entering regularly organized classes will submit to the same regulations as undergraduate students. Work will in many cases be individual and not controlled by a recitation schedule. At the time of entrance to the Graduate School the student must submit a plan of the entire work he wishes to present for the Master's or Doctor's degree. This plan must be approved by the professor of the major subject and the Dean of the Graduate School. Graduate work done before filing such plan will ordinarily not be counted toward advanced degrees.

The Library. The Library of Indiana University at present contains 121,718 cataloged volumes. The selection of these books has been made with a view to facilitating instruction and research. The collection is a well balanced one, but is especially strong in literary and scientific periodicals. The list of periodicals received and permanently kept on file by the library numbers about four hundred, and includes American,

English, German, French, and, to a less extent, Italian, Spanish, and Swedish publications. The library is made thoroly usable by a carefully prepared card catalog, by indexes, and by other bibliographical aids.

In the library building are seminary rooms for the Departments of History, Economics and Sociology, Philosophy, German, Romance Languages, Latin, Greek, and Political Science.

In addition to the central library, where the general literary and historical collections are housed, there are nine departmental collections, of varying sizes, kept in the different University buildings.

All books, with the exception of periodicals and books reserved for reference, may be drawn for home use. Each student may draw books for two weeks, with privilege of renewal, but subject to recall.

The library is open Monday to Friday, from 7:45 a.m. to 10 p.m., and on Saturdays from 8 a.m. to 5 p.m.

Fees. Students who are legal residents of the state of Indiana are charged a Contingent fee of \$9 a semester, and a Library fee of \$1.50 a semester. These fees cover in part the cost of the physical maintenance of the University; they are not applied to the cost of tuition, which is provided wholly by the state.

Students not legal residents of the state of Indiana will be charged a Contingent and Library fee amounting to \$30 a semester. The Summer session fee is \$15, irrespective of the length of the course, except that for a half-session's work in law \$10 is charged.

The Laboratory fees in all courses are uniformly \$1.50 per credit hour,* except in the School of Medicine (see heading School of Medicine in the University Catalog, or the Bulletin of the School of Medicine), and for courses in domestic art, for which a fee of \$1 a semester is charged.

The Gymnasium fee of \$2 a semester is charged all men students. Women students who take work in physical education will be charged a fee of \$1.50 a semester.

An Examination fee of \$1 is charged for each make-up or special examination. This fee is paid to the Bursar; his receipt, when presented to the proper instructor, constitutes the authorization for holding the examination.

The fee for any Degree is \$5, and must be paid to the Bursar of the University at least thirty days before graduation.

DEGREES

Three advanced degrees, Master of Arts, Master of Science, and Doctor of Philosophy, are conferred by the University.

Master of Arts. The degree Master of Arts may be conferred upon Bachelors of Arts of this University, or of any other institution of equivalent standing, or upon Bachelors of Science provided this degree is an alternative equivalent of the A.B. degree, following a residence at the University of a minimum of two semesters and the completion of a

* Because of the increased cost of chemicals and certain other laboratory supplies, due to the war, the laboratory fees have been increased about twenty-five per cent in the Department of Chemistry.

minimum of thirty hours of University credit; and in addition the passing of an oral examination on the work taken for the degree, when required by the major department.

Credit earned in excess of that required for the A.B. or the B.S. degree, before the degree is conferred or a certificate of the completion of the work for the degree is issued, is not counted toward the A.M. degree without special action of the Graduate Council before the work is done.

Twenty of the total of thirty hours required for the A.M. degree must be in one department, or in closely allied departments. Ten hours must be distinctly graduate in character. There is no restriction as to the amount of work that may be carried during any semester.

The work for the A.M. degree may all be done in summer sessions, provided that the work for the degree be completed within five years.

Professional studies are not accepted for the graduate degrees, but research work on professional subjects may be accepted for these degrees at the option of the professor in charge of the major subject.

A thesis is required in all departments except in the Departments of English and Latin.

Freshman courses will not be counted on advanced degrees.

The first ten hours in beginning French and German do not count on advanced degrees except by permission of the Graduate Council, on the written recommendation of the professor in charge of the major subject. The Council shall in such cases fix the amount of credit to be given. The amount of credit that a student may receive for elementary courses in other subjects is determined by the professor in charge of the major subject.

It is strongly urged that all students gain some proficiency in foreign modern language before entering the Graduate School. Credit in ten hours in foreign modern language, or the certified equivalent, is required of candidates for the A.M. degree. If the candidate does not meet this requirement before entering the Graduate School, he must obtain credit for ten hours of foreign language in addition to the regular thirty hours required for the A.M. degree, unless by special act of the Graduate Council partial credit is allowed for this work in accordance with the provisions noted in the preceding paragraph.

Master of Science. The degree Master of Science may be conferred upon Bachelors of Science of Indiana University under the same conditions upon which the degree of Master of Arts is conferred on Bachelors of Arts.

Doctor of Philosophy. The degree Doctor of Philosophy may be conferred upon graduates of this University, or of any institution of similar character and rank, upon the completion of an advanced course of study of not less than three years.

Each candidate for this degree will select a major subject consisting of the work of some one department or recognized subdivision of a department; and not less than two minors, at least one of which must be in some department related to, but distinct from, that of the major subject.

The course for the degree will be pursued under the direction of a committee consisting of the heads of the departments in which the work is done. Its value will be determined by a final examination, and by the presentation of a satisfactory thesis. The thesis should usually embody original work upon some prescribed or accepted subject; it must always give evidence that the candidate is capable of forming an independent judgment upon the recent literature of his department.

A detailed statement of the work offered for the degree, indorsed by the professor in charge of the major subject, must be submitted to the Council of the Graduate School not later than May 10 of the year in which the candidate presents himself for examination.

On the recommendation of the professor in charge of the major subject, and with the concurrence of the Council of the Graduate School, part of the three years' study required for this degree may be spent in residence at other universities.

The thesis of every candidate for the Doctor's degree shall be presented to the Council of the Graduate School on or before the first day of June of the year in which he is a candidate for the degree. The thesis must be indorsed by the head of the department as being in its final form, and ready for the press. If the candidate is recommended for the degree, arrangements must be made to deposit five printed copies of the thesis in the library.

The examination of each candidate for this degree will be conducted by a committee consisting of all the instructors under whom graduate work has been taken, in the presence of such members of the Faculty of the Graduate School as care to attend.

At least one year before the final examination the candidate shall satisfy the professor in charge of the major subject of his ability to use French and German for purposes of investigation.

Application for Degrees. Application for an advanced degree must be filed with the Dean at the time of admission of the candidate to the Graduate School. Application for the Doctor's degree must be on file at least one year before the candidate is admitted to the examination.

FELLOWSHIPS

University Fellowships. A number of University fellowships are available for graduate students. These fellowships carry with them an honorarium of between \$200 and \$500 annually. The highest amount will ordinarily be paid only if the incumbent is appointed for a third year. A fellowship is a recognition of scholarship. A portion of the fellow's time may be required in the service of the department in which he is appointed. Appointments are for one year.

Lawrence Fellowship in Astronomy. The Lawrence Fellowship of the Department of Astronomy has been established by Mr. Percival Lowell, of the Lowell Observatory, upon the following terms and conditions:

1. The fellowship shall be known as the Lawrence Fellowship, in remembrance of the donor's mother, and is established in perpetuity, revocable, however, at any time at the will of the founder.

2. It shall be annually available and shall cover the college calendar year, that is, from Commencement to Commencement of the same.

3. The applicant shall be appointed by the Department, the donor reserving the right of finally passing upon the suitability of the candidate so presented.

4. The fellow shall be given time and opportunity for an original thesis on some astronomical subject looking to the taking of a Master's degree, the nature of which shall be decided by the Director and the fellow. But the fellow shall be expected to give general assistance in the work of the Observatory during the period of his fellowship.

5. The fellowship will pay \$600 and the fellow's traveling expenses to and from the Observatory at Flagstaff, Ariz.; and a furnished room at the Observatory shall be free to the fellow's use.

Special Fellowships. There are besides the fellowships mentioned above, three special fellowships ranging in value from \$500 to \$1,000. These fellowships are created only for men of exceptional ability and merit, who may or may not have received the Ph.D. degree.

Scholarships for Graduates of Other Indiana Colleges.* The Trustees of Indiana University, at their March meeting, 1910, established ten graduate scholarships of an annual value of \$200 each, to be held by graduates of other colleges in the state. In awarding these scholarships the policy is to assign them to the most promising students, irrespective of the special field of study in which they wish to work, or the particular institutions from which they come. As between cases of equal merit, however, attention is given to securing a distribution of the awards among different departments of study and different colleges of the state.

Applicants for these scholarships should file a statement of their educational history and of their plans with the Dean of the Graduate School. They should indicate in this statement the major subject which they wish to pursue, and give a transcript of their college record. They should also present at this time recommendations from their instructors, and such other evidences of their fitness as they can offer. Applications will be received up to March 1 of each year.

Applications are referred in each case to the department concerned for a decision upon the respective merits of the applicants in that department. On the basis of the departmental reports, the Graduate Council recommends to the Trustees the most eligible candidate for appointment.

These scholarships are not open to students doing professional work in law or in medicine.

For application blanks, and further information, address the Dean of the Graduate School.

Special Rules Concerning Fellows and Scholars. Holders of fellowships and scholarships may be required to render some service to the University and are not permitted, without the special permission of the Graduate Council, to do other work for remuneration.

All fellows and scholars are exempted from the payment of Contingent, Library, and regular Laboratory fees.

* Discontinued during the war.

WATERMAN INSTITUTE FOR SCIENTIFIC RESEARCH

At a meeting of the Trustees of the University on May 12, 1915, Dr. Luther Dana Waterman, Professor Emeritus of Medicine in the Indiana University School of Medicine, presented to the Trustees deeds for property amounting in value to \$100,000, on the following conditions:

1. That he shall retain the management and income from the property during his lifetime.
2. That the proceeds from the property be devoted to the establishment and permanent maintenance of an Institute for Scientific Research.
3. That the Trustees bind themselves to appropriate annually an amount of money for the Institute equal to the annual proceeds from the property.

The Trustees accepted the proposal of Dr. Waterman in the following terms: "Resolved, That the generous gift of Dr. Luther D. Waterman to the University for the purpose therein stated be and is hereby accepted with the thanks of the Board. We hereby pledge the faith of the institution to carry out the conditions therein contained."

Departments and Courses of Instruction, 1918-19

DEPARTMENT OF ANATOMY

Professor MYERS; Associate Professor BADERTSCHER.

The following are the courses open to graduate students in the Department of Anatomy:

13. Research Work. Opportunity for research work is offered to advanced students who may have at least one-half their time for one year free for the work. I, II. Hours to be arranged. Mr. MYERS, Mr. BADERTSCHER.
15. Advanced Course in Anatomy. Open to students who have completed the dissection of the human body, and Course 8. I, II. Hours to be arranged. Mr. MYERS, Mr. BADERTSCHER.

DEPARTMENT OF ASTRONOMY

Associate Professor COGSHALL

Graduate work in this Department is partially provided for by the Lawrence Fellowship in Astronomy, described on page 13 of this bulletin. Other work of a graduate nature carried on at the University is included under the courses described below.

For a description of Kirkwood Observatory and its equipment see the University Catalog.

13. Astronomical Research. I, II. Days, hours, and credit to be arranged. Mr. COGSHALL.
14. Orbits of Spectroscopic Binaries. II. Days, hours, and credit to be arranged. Mr. COGSHALL.

DEPARTMENT OF BOTANY

Professor MOTTIER; Associate Professor ANDREWS; Assistant Professor VAN HOOK.

The following courses are open to graduate students in the Department of Botany:

4. Morphology of Fungi. I. Daily, 1-3. (5 cr.) Repeated II. Mr. VAN HOOK.
5. Plant Physiology. I. Daily, 1-3. (5 cr.) Repeated II. Mr. ANDREWS.
6. Cytology. I. Daily, 1-3. (5 cr.) Mr. MOTTIER.

- 5A. Research in Physiology. I, II. Days and hours to be arranged.
Mr. ANDREWS.
7. Research in Morphology and Cytology. I, II. Daily, at hours
to be arranged. Mr. MOTTIER.
13. Morphology of the Algae. I, II. Daily, at hours to be arranged.
Mr. MOTTIER.
18. Investigations in Mycology and Plant Pathology. I, II. Daily,
1-3. Mr. VAN HOOK.

DEPARTMENT OF CHEMISTRY

Professors LYONS, DAVIS*; Associate Professors BROWN, MATHERS, MAY;
Instructors HALE†, CARRICK‡.

Special attention is given to inorganic, organic, physiological, and physical chemistry, and to electrochemistry, technical analytical chemistry, and electrometallurgy.

The graduate work of the Department of Chemistry, leading to the A.M. and Ph.D. degrees, comprises advanced laboratory, lecture, library, and seminary work in the lines indicated above, and special graduate courses described below. A thesis embodying original investigation is required for an advanced degree.

The laboratories for advanced work and the departmental library are open from 8:00 a.m. to 4:50 p.m. There are no classes in the laboratories; each student works independently.

19. Physical Chemistry. Laboratory work. I. Laboratory open daily, 8-5. Hours to be arranged. Repeated II.
Mr. BROWN, Mr. HALE, Mr. CARRICK.
22. Electrochemistry. II. Lectures (A), M.W., at 8; laboratory (B), T.Th.F., 1-5. (22A, 2 cr.; 22B, 1 or more cr.)
Mr. BROWN, Mr. HALE, Mr. CARRICK.
15. Advanced Technical and Engineering Analysis. II. Laboratory open daily, 8-5. Hours to be arranged. Mr. MATHERS.
32. Gas and Fuel Analysis. II. Lectures (A), T., at 1; laboratory (B), at hours to be arranged. (2 cr.) Mr. MATHERS.
33. Spectrum Analysis and Sugar Analysis. I (first thirteen weeks). Lectures (A), F., at 1; laboratory (B), at hours to be arranged. (2 cr.) Mr. MATHERS.
26. Chemical Engineering. I. M.W.F., at 11. (3 cr.) Mr. BROWN.
14. Seminary: Inorganic Chemistry, Organic Chemistry, Electrochemistry, and Industrial Chemistry. I, II. Th., at 7 p.m.
Mr. LYONS, Mr. BROWN, Mr. MATHERS, Mr. MAY.
50. Research: Organic or Physiological Chemistry. I, II. Hours to be arranged. Mr. LYONS, Mr. MAY.

* Absent on leave during 1917-18.

† Absent on leave in the military service from December 1, 1917.

‡ From October 22, 1917.

51. Research: Chemistry of the Alkaloids. I, II. Hours to be arranged. Mr. DAVIS.
52. Research: Electrochemistry, Electrometallurgy, and Physical Chemistry. I, II. Hours to be arranged. Mr. BROWN.
53. Research: Inorganic Chemistry. I, II. Hours to be arranged. Mr. MATHERS.
24. Advanced Electrochemistry and Electrometallurgy. I, II. Lectures (A), F., at 8 (Second semester); laboratory (B), at hours to be arranged. Mr. BROWN.
25. Advanced Organic Chemistry. I, II. Lectures (A), T.Th., at 11 (First semester); laboratory (B), at hours to be arranged. Mr. MAY.
13. Elementary Metallurgy and Assaying. I. Lectures (A), M.W., at 8; laboratory (B), open F., 8-5. (3 cr.) Mr. BROWN, Mr. HALE.
29. Storage Batteries. I. Lectures (A), F., at 8; laboratory (B), one or more periods a week. Mr. BROWN.
31. Advanced Inorganic Chemistry. I, II. Laboratory open daily, 8-5. Hours to be arranged. Mr. MATHERS.

DEPARTMENT OF COMPARATIVE PHILOLOGY

Associate Professor STEMPLE.

The graduate courses offered below will be extended as required. They may be supplemented by certain of the courses listed as undergraduate, as well as by certain courses given in the other language departments and in the Departments of Economics and Sociology (Descriptive Sociology), History, Philosophy, and English.

- [5. Comparative Philology of the Classical Languages. I, II. M.W.F., at an hour to be appointed. (6 cr.) Mr. STEMPLE.] Omitted in 1918-19.
4. Gothic. I, II. T.Th., at 11. (4 cr.) Mr. STEMPEL.
- [8. Sanskrit. I, II. M.W.F., at 10. (6 cr.) Mr. STEMPEL.] Omitted in 1918-19.
- [9. Old High German. I, II. T.Th., at 11. (4 cr.) Mr. STEMPEL.] Omitted in 1918-19. Given in alternate years with Course 4.
- [10. Middle High German. I, II. T.Th., at an hour to be appointed. (4 cr.) Mr. STEMPEL.] Omitted in 1918-19.
- [11. Old Icelandic. I, II. M.W.F., at 9. (6 cr.) Mr. STEMPEL.] Omitted in 1918-19.
15. Seminary in Historical English Grammar. I, II. W., 2-4. Mr. STEMPEL.

DEPARTMENT OF ECONOMICS AND SOCIOLOGY

Professors WEATHERLY, RAWLES; Acting Associate Professor PHILLIPS.

The following courses are open to graduate students in the Department of Economics and Sociology:

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| 3a. | Public Finance. I. M.W.F., at 8. (3 cr.) | Mr. PHILLIPS. |
| 3b. | Special Tax Problems. II. M.W.F., at 8. (3 cr.) | Mr. PHILLIPS. |
| 9. | Transportation. II. M.W.F., at 9. (3 cr.) | Mr. RAWLES. |
| 28. | Insurance. II. T.Th., at 9. (2 cr.) | Mr. RAWLES. |
| [5.] | History of Economic Thought. I. M.W.F., at 11. (3 cr.)
Omitted in 1917-18. | Mr. PHILLIPS.] |
| 12. | Labor Organization. II. M.W.F., at 11. (3 cr.) | Mr. PHILLIPS. |
| 20. | Descriptive Sociology. (a) Social evolution. (b) Social assimilation. I, II. T.Th., at 10. (4 cr.) | Mr. WEATHERLY. |
| 4. | Social Pathology. (a) Poverty and charities. (b) Crime and penology. I, II. M.W.F., at 10. (6 cr.) | Mr. WEATHERLY. |
| 10a. | Socialism. I. T.Th., at 11. (2 cr.) | Mr. WEATHERLY. |
| 10b. | Methods of Social Reform. II. T.Th., at 11. (2 cr.) | Mr. WEATHERLY. |
| 7. | Principles of Sociology. (a) Social forces. (b) Social efficiency. I, II. M.W.F., at 11. (6 cr.) | Mr. WEATHERLY. |
| 30. | Graduate Seminary. I, II. At hours to be appointed. | Mr. WEATHERLY. |

DEPARTMENT OF ENGLISH

Professors HOWE, SEMBOWER; Associate Professors STEPHENSON, REYNOLDS, GREEVER; Assistant Professor SENOUR; Instructor HALE.

The Department of English is prepared to offer research work leading to the A.M. and Ph.D. degrees, in the following periods: Elizabethan literature, the literature of the seventeenth century, of the eighteenth century, and of the first half of the nineteenth century.

For the A.M. degree, the candidate should have had in his undergraduate work the equivalent of thirty hours of English, and should, in his graduate work, pursue a course restricted to three subjects, approved by the Department.

For the Ph.D. degree, the candidate will be expected to do at least two full years' work in residence after the Master's degree. He must be able to do a piece of independent research which will be acceptable to the Department.

The following courses are open to graduate students in the Department of English:

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| 50. | The Nineteenth-Century Romantic Poets. I, II. Days and hours to be appointed. (4 cr.) | Mr. GREEVER. |
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63. Literary Problems. I, II. T.Th., at 11. (4 cr.) Mr. REYNOLDS.
52. The Elizabethan Drama. I, II. M.W.F., at 11. (6 cr.)
Mr. REYNOLDS.
53. Shakspere. I. M.W.F., at 10. (3 cr.) Mr. STEPHENSON.
54. Eighteenth-Century Problems. I, II. Two hours each week.
(4 cr.) Mr. HOWE.
55. Nineteenth-Century Thought. I. T.Th., at 10. (2 cr.)
Mr. SEMBOWER.
56. The Art of Poetry. II. M.W.F., at 11. (3 cr.) Mr. SEMBOWER.
57. Literary Criticism. I. T.Th., at 9. (2 cr.) Mr. GREEVER.
58. Browning. II. Days and hours to be appointed. (2 cr.)
Mr. REYNOLDS.
59. Social Forces in English Literature. II. T.Th., at 9. (2 cr.)
Mr. HOWE.
60. Special Reading Course for advanced students. Credit and
hours to be arranged. Mr. HOWE, Mr. SEMBOWER, Mr. STEPH-
ENSON, Mr. REYNOLDS, Mr. GREEVER.
- Dante (Fine Arts 7). I, II. T.Th., at 11. (4 cr.)
Mr. BROOKS (Department of Fine Arts).
61. American Literature. II. Prerequisite, English 6. Days and
hours to be appointed. (2 cr.) Mr. SENOUR.
62. Milton. I, II. T.Th., at 9. (4 cr.) Mr. HALE.
63. The Poetry of the Sixteenth and Seventeenth Centuries. I, II.
T.Th., at 11. (2 cr.) Mr. SEMBOWER.

DEPARTMENT OF FINE ARTS

Professor BROOKS; Assistant Professor BURKE.

The following courses in the Department of Fine Arts may count as graduate work on the Master's degree:

16. The Plastic and Graphic Arts. A general introduction to architecture, sculpture, painting, and the minor arts. A first view of the history and meaning of these subjects, in their relations to civilization. T.Th., at 10. (2 cr.) Mr. BROOKS.
2. History of Architecture. Lectures, with collateral reading. (a) Greek and Roman. (b) Medieval and Renaissance. The Second semester's work may be taken without the first half-year's work. I, II. Daily, at 9. (10 cr.) Mr. BROOKS.
3. Sculpture. (a) Greek and Roman. (b) Middle Ages and Renaissance. The Second semester's work may be taken without the first half-year's work. I, II. T.Th., at 10. (4 cr.) Mr. BROOKS.

7. Dante. Lectures on *The New Life* and *The Divine Comedy*, accompanied by the reading of both in English. I, II. T.Th., at 11. (4 cr.) Mr. BROOKS.
10. Art Criticism. A seminary course in which the art criticism of Reynolds, Ruskin, Pater, Tolstoi, Coleridge, Symonds, Browning, and Hazlitt is studied. I, II. Days and hours to be arranged. (4 cr.) Mr. BURKE.

DEPARTMENT OF GEOLOGY

Professor CUMINGS; Associate Professors BEEDE*, LOGAN.

The Department of Geology offers work leading to the A.M. and Ph.D. degrees. Opportunity is afforded for advanced work and investigation in stratigraphic geology and paleontology, and in economic and geographic geology.

The following courses are open to graduate students in the Department:

3. Economic Geology. I, II. M.W.F., at 8. (6 or 10 cr.) Mr. LOGAN.
4. Advanced Historical Geology. I, II. M.W.F., at hours to be appointed. (6 cr.) Mr. CUMINGS.
5. Systematic Paleontology. I, II. Days and credit to be arranged. Mr. CUMINGS.
10. Research. I, II. Hours to be arranged. Mr. CUMINGS, Mr. LOGAN.
13. Advanced Field Work: Geological Survey. Days, hours, and credit to be arranged. Mr. LOGAN.
11. Seminary. I, II. M., at 4. (No credit.) Mr. CUMINGS, Mr. LOGAN.

DEPARTMENT OF GERMAN

Professors VOS, OSTHAUS; Associate Professor BARBA; Assistant Professor HESS.

The following courses are open to graduate students:

14. German Usage. II. T.Th., at an hour to be appointed. (2 cr.) Mr. HESS.
30. Studies in the Modern German Drama. I. M.W.F., at an hour to be appointed. (3 cr.) Mr. OSTHAUS.
32. The German Novel and "Novelle". II. M.W.F., at an hour to be appointed. (3 cr.) Mr. BARBA.
28. Journal Club. I. Two hours weekly, at an hour to be appointed. (2 cr.) Mr. VOS.

* Absent on leave from August 1, 1917, to August 1, 1918.

22. German Seminary. II. Two hours weekly, at an hour to be appointed. (2 cr.) Mr. Vos.
27. Middle High German. I. Two hours weekly, at an hour to be appointed. (2 cr.) Mr. Vos.
29. History of the German Language. II. Two hours weekly, at an hour to be appointed. (2 cr.) Mr. Vos.
31. Research. I, II. Hours to be arranged. Mr. Vos.

DEPARTMENT OF GREEK

Professor HOFFMAN; Associate Professor TILDEN.

The time that may be at present profitably devoted to graduate work in Greek is one year, leading to the A.M. degree. A thesis on some subject connected with the seminary work of the year is required for the degree.

All candidates for the A.M. degree with Greek as major subject are recommended to take at least ten hours in Latin, in advance of the Latin taken in the undergraduate study.

Courses 9, 12, and 13, or any part of these courses, are also open as minors to graduate students who have not already had as part of their undergraduate study the work which they take in these courses for graduate credit.

Following are the courses open to graduate students in the Department:

9. Lyric and Dramatic Poetry. I, II. Daily, at hours to be appointed. (10 cr.) Mr. TILDEN.
12. Philosophical Prose. I, II. T.Th., at 10. (4 cr.) Mr. HOFFMAN.
- [13. Historical and Rhetorical Prose. (a) Herodotus and Thucydides. (b) Demosthenes *On the Crown*. I, II. M.W.F., at hours to be appointed. (6 cr.) Mr. TILDEN.] Omitted in 1918-19.
- 15A. Graduate Seminary: Euripides. I, II. Th., at hours to be appointed. (4 cr.) Mr. HOFFMAN.
- 15B. Graduate Seminary. Author studied to be selected. I, II. W., at hours to be appointed. (4 cr.) Mr. TILDEN.

DEPARTMENT OF HISTORY

Professors WOODBURN, HARDING*; Assistant Professors KOHLMEIER, McDONALD; Instructor ESAREY.

Candidates for the Ph.D. degree with history as major subject will be examined in each of the following fields: (1) ancient history, with emphasis at the option of the candidate on either Greek or Roman history; (2) medieval and modern history, with emphasis on either the

* Absent on leave in the government service from November 9, 1917, to the end of the academic year.

medieval or the modern field; (3) English history, with emphasis either on the period before 1603 or after that date; and (4) American history, with chief emphasis either on the period before 1783, or after that date. The examination on the special field of the thesis will naturally be more searching than elsewhere.

Following are the courses open to graduate students in this Department:

- [6. English Constitutional History to 1603. I, II. M.W.F., at 8.
(6 cr.) Mr. HARDING.]
Omitted in 1918-19.
- 7. English Constitutional History, 1603-1917. I, II. M.W.F., at 8.
(6 cr.) Mr. HARDING.
- 8. American Colonial History. I, II. T.Th., at 8. (4 cr.)
Mr. KOHLMEIER.
- 9. Renaissance and Reformation. I, II. T.Th., at 11. (4 cr.)
Mr. HARDING.
- 10. Modern Europe. From about 1750 to the present time. I, II.
M.W.F., at 11. (6 cr.) Mr. KOHLMEIER.
- 13. France in the Middle Ages. Ability to read French is a pre-requisite. I, II. T.Th., at 3. (4 cr.) Mr. HARDING.
- 16. Historical Method. I. T.Th., at 2. (2 cr.) Mr. HARDING.
- 17. Historians and History Writing in the Nineteenth Century. II.
T.Th., at 2. (2 cr.) Mr. HARDING, Mr. WOODBURN.
- 22. American Diplomatic History, 1776-1914. I, II. T.Th., at 2.
(4 cr.) Mr. KOHLMEIER.
- 28. Origin and Growth of the American Constitution. I. M.W.F.,
at 3. (3 cr.) Mr. WOODBURN.
- 29. Causes and Results of the Civil War in America. II. M.W.F.,
at 3. (3 cr.) Mr. WOODBURN.
- 30. Development of the American West. I, II. M.W.F., at 8. (6
cr.) Mr. ESAREY.
- 35. Modern Russia. I. M.W.F., at 9. (3 cr.) Mr. HARDING.
- 36. Balkan Problems. I. M.W.F., at 8. (3 cr.) Mr. KOHLMEIER.
- 20A. Seminary in English History. I, II. W., 4-5:30. (Credit as
arranged.) Mr. HARDING.
- 20B. Seminary in Modern European History. I, II. W., 4-5:30.
(Credit as arranged.) Mr. McDONALD.
- 20C. Seminary in American History. I, II. M., 4-5:30. (Credit as
arranged.) Mr. WOODBURN.
- 20D. Seminary in Indiana History. I, II. At hours to be arranged.
(Credit as arranged.) Mr. WOODBURN, Mr. ESAREY.

DEPARTMENT OF HOME ECONOMICS

Associate Professor WELLMAN; Assistant Professor SAGE; Instructor DAUM.

To carry graduate work in this Department, students must have completed the equivalent of twenty hours of work in this subject, or must make up the deficiency. The character of the advanced work may be varied according to the needs of the student and may deal with the scientific, the economic, the sociological, or the artistic aspects of the subject.

Following are the courses open to graduate students in the Department:

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| 4. | Applied Design. II. T.Th., 1-3. (2 cr.) | Miss SAGE. |
| 5. | History of Costume and Costume Design. Prerequisite, Fine Arts 14. I. Daily, 10-12. (5 cr.) | Miss SAGE. |
| 14. | Dietetics and Food Chemistry. Prerequisites, Home Economics 10 or 11, 12 (is prerequisite or parallel), Chemistry 3C. I, II. M.W.F., 10-12. (6 cr.) | Miss WELLMAN. |
| 16. | Foods III. Prerequisite, Home Economics 14. I, II. T.Th., 8-10. (4 cr.) | Miss DAUM. |
| 25. | Evolution of the Home. I, II. M.W.F., at 8. (6 cr.) | Miss WELLMAN. |
| 26. | Economics of the Family. I, II. T.Th., at 11. (4 cr.) | Miss DAUM. |
| 27. | Seminary. Hours to be arranged. | Miss WELLMAN. |
| 28. | Research. Special problems. Hours to be arranged. | Miss DAUM. |
| 29. | Women and Children in the Textile Industries. I. Hours to be arranged. | Miss SAGE. |

DEPARTMENT OF JOURNALISM

Professor PIERCY.

To students who have taken twenty hours of journalism as a minor with a major subject in either English, history, political science, philosophy, or economics, the Department offers one year of graduate work leading to the degree A.M.. At least sixteen hours of work in journalism are required, the other fourteen hours to be arranged for in consultation with the head of the Department. It is contemplated that a thesis shall be an important part of the year's work, and shall receive five hours of credit out of the sixteen. The subject of the thesis will deal either with some phase or field of country journalism, or with some special work in city journalism, the specialization being related, if deemed best, to the student's major subject when an undergraduate.

2. Practical Newspaper Work (on the staff of *The Indiana Daily Student*). Editorial work exclusively. I, II. Daily, at hours to be arranged. (6 cr.) Mr. PIERCY.
11. Advanced Course in Newspaper and Magazine Writing. I. T., 3-5. (2 cr.) Repeated II. Mr. PIERCY.
20. Seminary. I, II. Consultation hours to be arranged. Mr. PIERCY.

DEPARTMENT OF LATIN

Professor STOUT; Associate Professor BERRY.

Students who begin the graduate study of Latin after having completed an undergraduate course in the subject equivalent to that required of a major in the Department of Latin in Indiana University can complete the work for the Master's degree in one year. In special cases the work can all be done in summer sessions. The writing of a thesis is not required of all candidates for the Master's degree, but it is advised for those who expect to take additional work looking to the degree of Doctor of Philosophy. The work required for the Master's degree, while affording an introduction to the methods of investigation, is arranged primarily to give a wider and more thoro acquaintance with the language and literature, institutions and history of the Roman people. It is hoped that this will meet equally well the needs of those who wish to become better teachers of Latin in the high schools and the lower grades of the college course, and of those who desire a proper foundation for the more advanced study of Latin.

The purely graduate courses at present offered, and those to be added, will be given in a series such as to offer opportunity for a three years' course of graduate study. Candidates for the Ph.D. degree whose major subject of study is Latin are required to make Greek their principal minor subject. A wide range of choice will be allowed for the second minor subject, the only requirement being that such courses shall contribute in some definite way to the principal work of the candidate. Every library resource required for investigations assigned by the Department will be supplied if not at present in the library.

The Junior and Senior reading courses (Courses 33, 35, 41, 42) of the undergraduate work may be taken for graduate credit if certain additional work of graduate character assigned by the instructor be done in connection with them. The authors read in these courses are varied in different years, and thru a three-years' period afford graduate students opportunity for a wide course of reading.

31. History of Latin Literature. I. T.Th., at 9. (2 cr.) Miss BERRY.
- [33. Junior Reading Course. Alternates with Latin 35 and is similar in aim. (a) Cicero's Tusculan Disputations, Book I, with collateral reading from other writers who reflect Roman thought concerning the destiny of the soul. (b) Plautus.

- Prerequisites, Latin 11, 14, 25, 26. I, II. M.W.F., at 9. (6 cr.) Miss BERRY.] Omitted in 1918-19.
35. Junior Reading Course. An elective course, advised for all Latin majors who can arrange to take it. The authors and works read lie in fields of literature not adequately represented in other parts of the Latin course. (a) Prose of the Empire. (b) Juvenal: Selected Satires. I, II. M.W.F., at 9. (6 cr.) Miss BERRY.
- [41. Senior Reading Course. Alternates with Latin 42 and is similar in aim. (a) The classical historians of Rome. (b) Vergil's works. Prerequisite, twenty hours of credit in Latin. I, II. M.W.F., at 11. (6 cr.) Mr. STOUT.] Omitted in 1918-19.
42. Senior Reading Course. An intensive study of one or more representative authors with collateral reading of other authors in the original and in translations, and written reports on the collateral reading. (a) Cicero: Orations. A number of orations will be read which are closely connected with the public life of the time or with the political fortunes of the author. (b) Readings from the Latin poets. Chiefly from those who are little read or not read at all in other parts of the Latin course. The selections cover all periods of Latin literature. Prerequisite, twenty hours of credit in Latin. I, II. M.W.F., at 11. (6 cr.) Mr. STOUT.
- [51. Latin Inscriptions. A course to teach the use of inscriptions for purposes of investigation. Summer session. (2½ cr.) Mr. STOUT.] Omitted in 1918.
52. The Topography and Monuments of Ancient Rome. Studied from ancient and medieval sources. I, II. M., 3-5. (4 cr.) Miss BERRY.
- [53. The Reign of Augustus Caesar. Studied from the sources. Summer session. Daily, at 9. (2½ cr.) Mr. STOUT.] Omitted in 1918.
- [54. The Military System of the Romans. Studied from the classical authors and Latin inscriptions. Summer session. Daily, at 7:30. (2½ cr.) Mr. STOUT.] Omitted in 1918.
- [55. The Latin Romance: *Saturae* of Petronius, and *Metamorphoses* of Apuleius. A study is made of the origin, characteristics, and later developments of the Latin romance. I, II. M., 3-5. (4 cr.) Miss BERRY.] Omitted in 1918-19.
56. Roman Provincial Administration. Studied from the classical authors and Latin inscriptions. Open to Seniors, graduate students, and qualified teachers. Summer session. Daily, at 7:30. (2½ cr.) Mr. STOUT.

- [61. Seminary: The Letters of Pliny the Younger. (a) An introduction to the science of text criticism, based on the text of the letters of Pliny. (b) A series of studies on topics connected with the language and the subject-matter of the letters. I, II. W., 3-5, and another hour to be arranged. (6 cr.) Mr. STOUT.] Omitted in 1918-19.
- [62. Seminary: Political Problems of the Romans. I, II. W., 3-5. (4 cr.) Mr. STOUT.] Omitted in 1918-19.
63. Seminary: The Roman Drama. Its development and technique, and its place in Roman life. About half of the extant dramas will be read in connection with the course. I, II. W., 3-5, and another hour to be arranged. (6 cr.) Mr. STOUT.

DEPARTMENT OF MATHEMATICS

Professors DAVISSON, ROTHROCK; Associate Professor HANNA; Assistant Professor WILLIAMS*; Instructor DANTZIG.

The graduate courses at present offered by the Department of Mathematics lead to the A.M. and Ph.D. degrees.

A student wishing to secure the Doctor's degree with mathematics as major subject must, early in his graduate career, designate one of the following main divisions of mathematics as his specially chosen field: (1) arithmetic and algebra; (2) calculus and theory of functions; (3) geometry; (4) applied mathematics. In his specially chosen field, the candidate must present an acceptable thesis, showing an original treatment and giving evidence of original research, and be examined in three of the fields enumerated above.

The library of the Department, consisting of about 2,500 bound volumes, is located in Room 36, Wylie Hall. The library is open from 8 a.m. to 10 p.m., for use by students pursuing advanced work in mathematics.

The following courses are offered for properly qualified students. Days, hours, and credit will be arranged.

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|--|----------------|
| 21. Theory of Functions. | Mr. ROTHROCK. |
| 39. Theory of Invariants. | Mr. HANNA. |
| 30. Differential Geometry. | Mr. DAVISSON. |
| [31. Encyclopedia of Elementary Mathematics.
Omitted in 1918-19.] | Mr. ROTHROCK.] |
| 44. Non-Euclidean Geometry. | Mr. DAVISSON. |
| [26. Projective Geometry.
Omitted in 1918-19.] | Mr. DAVISSON.] |
| 32. Theory of Numbers. | Mr. HANNA. |
| 45. Calculus of Variations. | Mr. ROTHROCK. |

* Absent on leave in the military service.

51. Linear Differential Equations. Mr. WILLIAMS.
 55. Theory of Transformations. Mr. DANTZIG.
 20. Mathematical Reading and Research. Professors DAVISSON,
 ROTHROCK; Associate Professor HANNA; Assistant Professor
 WILLIAMS; Instructor DANTZIG.

DEPARTMENT OF PHILOSOPHY

Professor BOOK; Acting Professors ELKIN, WILLIAMS; President BRYAN.

Following are the courses open to graduate students in the Department of Philosophy:

35. Modern Idealism. I, II. T.Th., at 10. (4 cr.) Mr. ELKIN.
 36. Logic of Science. I. Two hours once a week, at a period to be appointed. (2 cr.) Mr. ELKIN.
 5. Advanced Psychology. II. M.W.F., at hours to be appointed. (3 cr.) Mr. BOOK.
 [7a. Comparative Psychology of Lower Organisms. I. M.W.F., at 11. (3 cr.) Mr. BOOK.]
 Omitted in 1918-19.
 30. Seminary in Philosophy. I, II. Two hours a week, at hours to be appointed. Mr. ELKIN.
 34. Psychological Seminary. I, II. Two hours a week, at hours to be appointed. Mr. BOOK, Mr. WILLIAMS.
 8. Psychological Research. I, II. At hours to be arranged. Mr. BOOK.
 40. Psychology of Learning and of Work. Given in conjunction with Education 17b. II. M.W.F., at 11. (3 cr.) Mr. BOOK.
 33. Mental Development. Given in conjunction with Education 17a. I. M.W.F., at 11. (3 cr.) Mr. BOOK.
 42. Mental Measurements. I, II. T.Th., at 9. (4 cr.)

DEPARTMENT OF PHYSICS

Professor FOLEY*; Associate Professors RAMSEY, DUTCHER; Assistant Professor MOLBY.

The graduate courses offered by the Department of Physics lead to the A.M. and Ph.D. degrees.

The courses comprising the work of the first three years (thirty hours) in physics, also courses in photography, general laboratory work, the teaching of physics and physical manipulation, modern physics, and analytical mechanics (altogether forty-two hours) will be found listed in the bulletin of the College of Liberal Arts, or in the University Cata-

* Waterman Research Professor in 1917-18.

log. The following courses are open to graduate students, and to such undergraduates as may be prepared to take them:

- 16. Spectroscopy. I, II. T.Th., at 2. (4 cr.) Mr. RAMSEY.
- 18. Applied Electricity and Dynamo-Electric Machinery. I. Days and hours to be arranged. (3 cr.) Mr. RAMSEY.
- 20. Electric Waves. II. T.Th., at 2. (2 cr.) Mr. DUTCHER.
- 22. The Conduction of Electricity thru Gases, Radio-activity, Electron Theory. II. Days and hours to be arranged. (3 cr.) Mr. RAMSEY.
- 29. Differential Equations in Physics. I. M.W.F., at 8. (3 cr.) Mr. RAMSEY.
- [31. Thermodynamics. I. T.Th., at 8. (2 cr.) Mr. MOLBY.] Omitted in 1918-19.
- 33. Physical Optics. I, II. T.Th., at 9. (4 cr.) Mr. DUTCHER.
- [35. Advanced Mathematical Electricity. I, II. T.Th., at 9. (4 cr.) Mr. RAMSEY.] Omitted in 1918-19.
- 37. Current Physical Literature. I, II. T.Th., at 10. (4 cr.) Mr. RAMSEY.
- 39. Advanced Theoretical Physics. I, II. T.Th., at 11. (4 cr.) Mr. RAMSEY.
- 40. Advanced Laboratory Methods and Research. I, II. Days and hours to be appointed. Mr. RAMSEY.

DEPARTMENT OF PHYSIOLOGY

Professor MOENKHAUS; Instructor EDMONDSON.

The following courses in the Department of Physiology are open to graduate students:

- 6. Advanced Physiology. I, II. Daily, at hours to be arranged. (Credit to be arranged.) Mr. MOENKHAUS, Mr. EDMONDSON.
- 10. Research. I, II. Daily, 8-4. Mr. MOENKHAUS, Mr. EDMONDSON.
- 11. Seminary. I, II. M., at 4. (2 cr.) Mr. MOENKHAUS, Mr. EDMONDSON.

DEPARTMENT OF POLITICAL SCIENCE

Professor HERSHÉY; Associate Professor BATES.

The following courses are open to graduate students in the Department of Political Science:

- 5. Municipal Government. I. M.W.F., at 10. (3 cr.) Mr. BATES.
- [7. Legislatures and Legislation. I. M.W.F., at 8. (3 cr.) Mr. BATES.] Omitted in 1918-19. Given in alternate years with Political Science 8.

8. Public Administration. I. M.W.F., at 8. (3 cr.) Mr. BATES.
9. Social Politics. II. M.W.F., at 8. (3 cr.) Mr. BATES.
11. Political Theory. II. T.Th., at 10. (2 cr.) Mr. HERSHHEY.
- [12. Problems of American Foreign Policy. M.W.F., at 10. (3 cr.)
Mr. HERSHNEY.]
Omitted in 1918-19. Given in alternate years with Course 14.
13. International Relations. (a) Present-Day Europe. (b) The Far East. I, II. M.W.F., at 11. (6 cr.) Mr. HERSHHEY.
14. America and the European War. II. M.W.F., at 10. (3 cr.) Mr. HERSHHEY.
15. Public International Law. I, II. T.Th., at 1. (4 cr.) Mr. HERSHHEY.
16. Training for Public Service. I, II. Hours by arrangement. Mr. BATES.
21. Seminary in Government. I, II. Hours by arrangement. Mr. BATES.
22. Seminary in International Law and Diplomacy. I, II. Hours and credit by arrangement. Mr. HERSHHEY.

DEPARTMENT OF ROMANCE LANGUAGES

Associate Professors MORRIS, MOSEMILLER, HILL.

The Department of Romance Languages offers one year of graduate work, leading to the degree of Master of Arts.

Following are the courses in the Department open to graduate students:

Courses in French

- [39. Classical Drama. I, II. M.W.F., at 8. (6 cr.) Mr. MORRIS.]
Omitted in 1918-19.
40. Nineteenth-Century Authors. I, II. M.W.F., at 8. (6 cr.) Mr. MORRIS.
- [32. Contemporary Fiction. I, II. T.Th., at 10. (4 cr.) Mr. MORRIS.]
Omitted in 1918-19.
33. Contemporary Drama. I, II. T.Th., at 10. (4 cr.) Mr. MORRIS.
26. Third-Year Composition. Conducted in French. I, II. T.Th., at 9. (4 cr.) Mr. MOSEMILLER.
28. Fourth-Year Composition. Intended especially for those who expect to teach French. Conducted in French. I, II. T.Th., at 2. (4 cr.) Mr. MOSEMILLER.

Other Courses

36. Third-Year Spanish Composition. I, II. T.Th., at 8. (4 cr.)
Mr. HILL
37. Nineteenth Century: The Spanish Novel. I, II. M.W.F., at 8.
(6 cr.) Mr. HILL.
38. Cervantes: *Don Quixote*. I, II. Hours to be arranged. (2 cr.)
Mr. HILL.
13. Old French. I, II. M.W.F., at 2. (6 cr.) Mr. MOSE MILLER.

DEPARTMENT OF SOCIAL SERVICE

Director HENRY.

The Department is prepared to offer opportunities in research leading to the A.M. and Ph.D. degrees. All of the work must be done in Indianapolis, but is subject otherwise to the rules which govern all graduate work.

Study may follow practical, statistical, or scientific lines, but must include a thesis embodying original investigation.

20. Research. Study of statistics and information gathered by the Department; or of conditions, in any part of the state, discovered in its work. I, II. Hours to be arranged. Miss HENRY.

DEPARTMENT OF ZOOLOGY

Professor EIGENMANN; Associate Professor PAYNE; Assistant Professor SCOTT.

All work in the Department during the summer is done at the Biological Station, Winona Lake, Indiana.

Following are the courses open to graduate students in the Department of Zoölogy:

30. Advanced Zoölogy. Individual work. I, II. Daily, 8-4.
Mr. EIGENMANN, Mr. PAYNE, Mr. SCOTT.
32. Heredity and Evolution. Given in conjunction with Botany 21.
I. T.Th., at 11. (2 cr.)
Mr. PAYNE, Mr. WEATHERWAX (Department of Botany).
50. Seminary. I, II. Th., at 4. Mr. PAYNE.
60. Research. I, II. Mr. EIGENMANN, Mr. PAYNE, Mr. SCOTT.

SCHOOL OF EDUCATION

Professors SMITH, BLACK, BOOK, LEONARD*; Associate Professor CHILDS.

Graduate work is offered in the School of Education, and special programs leading to the A.M. and Ph.D. degrees, with the Master's and Doctor's certificate in education, will be arranged on application.

* Absent on leave during academic year 1917-18.

A student whose undergraduate major was in the College of Liberal Arts will usually be given opportunity to do in one year the work for the A.M. degree in education. The work will include such undergraduate courses in education as may be necessary as a basis for the graduate work.

The courses of the summer sessions are so arranged that graduate students in the School of Education may complete the work for the Master's degree in summer sessions.

Graduate students in the School of Education may, by special arrangement, complete the work for two-thirds of a semester in the Summer session of 1918 by remaining until August 23.

Following are the courses open to graduate students in the School:

6. History of Education. (a) Ancient and medieval periods. (b) Modern European and American systems. I, II. M.W.F., at 9. (6 cr.) Mr. CHILDS.
10. Philosophy of Education. I, II. M.W.F., at 10. (6 cr.) Mr. BLACK.
12. Advanced Course in High School Problems. (a) High school supervision. (b) The high school curriculum. Open to Seniors and graduate students with teaching experience or who have had Education 1 and 3 or their equivalent. Intended for principals and teachers of experience who are preparing for high school administration. I, II. T.Th., at 11. Mr. CHILDS.
15. School Administration. (a) General view of the field of school administration. (b) Intensive study of certain phases of school administration with special attention given to types of school surveys. I, II. M.W.F., at 9. (6 cr.) Mr. SMITH.
- 17a. Mental Development. Given in conjunction with Philosophy 33. I. M.W.F., at 11. (3 cr.) Mr. BOOK.
- 17b. Psychology of Learning and of Work. Given in conjunction with Philosophy 40. II. M.W.F., at 11. (3 cr.) Mr. BOOK.
9. Measurement of Intelligence. I, II. T.Th., at 9. (4 cr.) Mr. BOOK.
19. Rural Education. I, II. M.W.F., at 9. (6 cr.) Mr. BLACK.
20. The Theory and Administration of Vocational Education. I, II. M.W.F., at 8. (6 cr.) Mr. LEONARD.
21. Vocational Guidance. I, II. T.Th., at 8. (4 cr.) Mr. LEONARD.
22. Vocational Surveys. Designed for superintendents, principals, and directors of vocational education. I, II. M.W.F., at 9. (6 cr.) Mr. LEONARD.
- 16B. Seminary in School Administration. I. M., at 4. Mr. SMITH.
- 16C. Seminary in Elementary Education. The topic for discussion will be The Pedagogy of the Bible. I. M., 4-6. Mr. BLACK.
- 16D. Seminary in Secondary Education. I. T., 7-9. Mr. CHILDS.

- 16F. Seminary in Vocational Education. I, II. Time to be arranged.
Mr. LEONARD.
- 18B. Research: School Administration. I, II. Hours to be arranged.
Mr. SMITH.
- 18C. Research: Elementary Education. I, II. Hours to be arranged.
Mr. BLACK.
- 18D. Research: Secondary Education. I, II. Hours to be arranged.
Mr. CHILDS.
- 18E. Research: Educational Psychology. I, II. Hours to be ar-
ranged. Mr. BOOK.
- 18F. Research: Vocational Education. I, II. Hours to be arranged.
Mr. LEONARD.
23. Educational Measurements. II. T.Th., at 9. Mr. SMITH.

Students in Graduate School, 1917-18

* * The following list includes all graduate students who were in attendance in the Summer session of 1917, and the First and Second semesters of 1917-18. These sessions are indicated by "s," "1," "2," respectively. A star prefixed to the year of graduation indicates that the student completed his A.B. work at the end of the First semester and was enrolled in the Graduate School at the beginning of the Second semester, altho the A.B. diploma will not be conferred until the Commencement of 1918.

Akin, Lydia Mabel (s).....	<i>Home Economics</i>	Bloomington.
A.B., Indiana University, 1916.		
Allen, William Ray (1, 2).....	<i>Zoölogy</i>	Hartford City.
A.B., Indiana University, 1913; A.M., 1914.		
Allerdice, Martha S (s).....	<i>Social Service</i>	Indianapolis.
A.B., University of Chicago, 1902.		
Anderson, Flora Charlotte (1, 2).....	<i>Botany</i>	Crawfordsville.
A.B., Indiana University, 1914; A.M., 1917.		
Andrews, Helen Hunt (1, 2).....	<i>Social Service</i>	Indianapolis.
A.B., Butler College, 1917.		
Andrews, (Mrs.) Marie O. (s).....	<i>Botany</i>	Bloomington.
A.B., Indiana University, 1902; A.M., Wellesley College, 1903.		
Azárraga, Francisco (s).....	<i>Philosophy</i>	Calibo, Capiz, P.I.
A.B., Colegio de San Beda, 1911.		
Bailey, Warren Grant (s).....	<i>Econ. and Soc.</i>	Indianapolis.
A.B., Indiana Central University, 1914; A.M., Indiana University, 1917.		
Baker, (Mrs.) Mary Loveless (1).....	<i>English</i>	Jasper.
A.B., Indiana University, 1915.		
Baker, Wendell Anthony (s).....	<i>Education</i>	Bloomington.
A.B., Indiana University, 1914.		
Barba, (Mrs.) Eleanor Martin (2).....	<i>English</i>	Bloomington.
A.B., Indiana University, 1915; A.M., 1916.		
Barr, Arvil Sylvester (2).....	<i>History</i>	Selvin.
A.B., Indiana University, 1915; A.M., 1915.		
Bass, William Lewis (s).....	<i>History</i>	Stendal.
A.B., Indiana State Normal School, 1915.		
Batchelor, Isabelle (1, 2).....	<i>Latin</i>	Vernon.
A.B., Indiana University, 1909.		
Beals, Colonzo Chelice (1, 2).....	<i>Geology</i>	Russiaville.
A.B., Indiana University, 1917.		
Beghtel, (Mrs.) Flossie Loem (1).....	<i>Special English</i>	Bloomington.
A.B., Indiana Central University, 1912.		
Beghtel, Floyd Eldon (1).....	<i>Botany</i>	Bloomington.
A.B., Indiana Central University, 1912; A.M., Indiana University, 1917.		
Bell, William Howard (1, 2).....	<i>Chemistry</i>	Terre Haute.
A.B., Indiana State Normal, 1917.		
Benekart, Margaret Nold (2).....	<i>English</i>	Bloomington.
A.B., Indiana University, 1913.		
Bennett, Orval (s).....	<i>Pol. Sci.</i>	Indianapolis.
A.B., Indiana University, 1915; A.M., 1917.		
Beugnot, Ann Irene (1, 2).....	<i>English</i>	Fort Wayne.
A.B., Indiana University, 1917.		
Blew, Michael James (1).....	<i>Chemistry</i>	Wabash.
A.B., Indiana University, 1915; A.M., 1916.		
Booker, William Raymond (s).....	<i>Education</i>	Pleasantville.
A.B., Indiana University, 1916.		
Boruff, Glenn Tourner (1).....	<i>Chemistry</i>	Bloomington.
A.B., Indiana University, 1916.		
Bowles, Marie (2).....	<i>Home Economics</i>	Bloomington.
A.B., Indiana University, 1915.		

Breeze, Frederick John (s, 1, 2)	<i>Geology</i>	Bloomington.
B.S., Purdue University, 1910; M.S., 1912.		
Brosey, Charles Lee (s)	<i>Physics</i>	Union City.
A.B., Indiana University, 1915.		
Brown, Leila Moffett (1, 2)	<i>Social Service</i>	Indianapolis.
A.B., DePauw University, 1912.		
Brown, Mildred M (s)	<i>Social Service</i>	Columbus.
A.B., Western College, 1911.		
Burke, Artie Eden (s)	<i>Education</i>	Bloomington.
A.B., Indiana University, 1914.		
Bryan, Maude Esther (1, 2)	<i>Latin</i>	Bloomington.
A.B., Indiana University, 1914.		
Carlock, (Mrs.) Ethel Wohrer (1)	<i>Special Home Econ</i>	Bloomington.
A.B., Indiana University, 1917.		
Carrick, Leo Lehr (1, 2)	<i>Chemistry</i>	Bloomington.
A.B., Valparaiso University, 1910; M.S., 1911; A.M., Indiana University, 1914.		
Carson, Melville Kennedy (s)	<i>English</i>	Oakdale, Ill.
A.B., Geneva College, 1916.		
Cauble, Christopher Columbus (1, 2)	<i>Education</i>	Clayton.
A.B., Indiana University, 1910.		
Chandler, Jesse (s)	<i>Education</i>	Alfordsville.
A.B., Indiana University, 1917.		
Childs, (Mrs.) Laura Goff (s, 1, 2)	<i>Special English</i>	Bloomington.
A.B., Indiana University, 1915; A.M., 1917.		
Clark, Reeta (s)	<i>Education</i>	Clark's Hill.
A.B., Hiram College, 1913.		
Clayton, Clarence R (1, 2)	<i>Mathematics</i>	Bloomington.
A.B., Indiana University, 1917.		
Clayton, Vista May (s)	<i>English</i>	Linton.
A.B., Indiana University, 1915.		
Cogswell, Audney May (s)	<i>Mathematics</i>	Bloomington.
A.B., Indiana University, 1915.		
Coleman, Margaret Faith (s)	<i>English</i>	Bloomington.
A.B., Indiana University, 1915; A.M., 1917.		
Cooper, Jennie Alwilda (s)	<i>English</i>	Indianapolis.
A.B., Indiana University, 1913.		
Cox, David Clarke (s, 1, 2)	<i>Chemistry</i>	Madison.
A.B., Hanover College, 1916.		
Craven, Nellie Pearl (1)	<i>Latin</i>	Nineveh.
A.B., Indiana University, 1911.		
Culbertson, Julian L (1, 2)	<i>Chemistry</i>	Vevay.
A.B., Hanover College, 1917.		
Culbertson, Kenneth Morton (s)	<i>Latin</i>	Kokomo.
A.B., Indiana University, 1916.		
Curry, Claude Allen (1)	<i>Anatomy</i>	Farmersburg.
A.B., Indiana University, 1916; A.M., 1917.		
Daum, Kate (1)	<i>Home Economics</i>	Lawrence, Kan.
A.B., University of Kansas, 1913; A.M., 1916.		
Denny, Martha Livingston (s, 1, 2)	<i>Zoölogy</i>	Terre Haute.
A.B., Indiana University, 1917.		
Dickey, Anna (s)	<i>History</i>	West Baden.
A.B., Indiana University, 1915.		
Dowden, Marie Louise (1)	<i>English</i>	Bloomington.
A.B., Indiana University, 1917.		
Driver, Charles S (s, 1, 2)	<i>Zoölogy</i>	Weyer's Cave, Va.
A.B., Bridgewater College, 1916.		
Ead, Wade (2)	<i>History</i>	Anderson.
A.B., Indiana University, *1918.		
Eades, Henry Drury (s)	<i>Economics</i>	Evansville.
A.B., Cherry College, Ky., 1905; A.M., Indiana University, 1917.		
Eaton, Durward Leslie (s, 1, 2)	<i>Physics</i>	Liberty.
B.S., Earlham College, 1907; A.M., University of Colorado, 1908.		
Eickhoff, Edith Frieda (s)	<i>German</i>	Indianapolis.
A.B., Butler College, 1917.		

Elabarger, Alford Leander (s)	<i>History</i>	Hartford City.
A.B., Indiana University, 1913.		
Evans, Beatrice Clementine (s)	<i>English</i>	Bloomington.
A.B., Indiana University, 1910; A.M., 1911.		
Farmer, Hallie (s)	<i>History</i>	Anderson.
A.B., Indiana State Normal School, 1916.		
Fisher, Elisha Lemuel (s)	<i>Political Science</i>	Bloomington.
LL.B., Central Normal College, 1909; A.B., Indiana University, 1917.		
Fleming, (Mrs.) Jennie B (s)	<i>Latin</i>	Moores Hill.
A.B., Moores Hill College, 1891.		
Foster, Ethel Henrietta (s)	<i>Home Economics</i>	Bloomington.
A.B., Indiana University, 1909.		
Foxworthy, Jay Addison (1,2)	<i>History</i>	Bloomington.
A.B., Indiana University, 1917.		
Gerst, Mary Josephine (s)	<i>English</i>	Evansville.
A.B., Indiana University, 1917.		
Goldsmith, (Mrs.) Amy Houchin (s)	<i>Home Economics</i>	Oakland City.
A.B., Indiana University, 1916.		
Gregory, Mabel Hanna (s)	<i>English</i>	Bloomington.
A.B., Indiana University, 1912.		
Grissom, Allan Wilson (s)	<i>English</i>	Unionville.
Diploma Indiana State Normal; A.B., Indiana University, 1914; A.M., 1917.		
Grossnickel, Russell L (s)	<i>Mathematics</i>	North Manchester.
A.B., Manchester College, 1915.		
Guthrie, Bessie Alma (s)	<i>Latin</i>	Bloomington.
A.B., Indiana University, 1916.		
Hale, George Clyde (1)	<i>Chemistry</i>	Dugger.
A.B., Indiana University, 1915; A.M., 1915.		
Hansford, Hazel Irene (s,1)	<i>Psychology</i>	Bloomington.
A.B., Indiana University, 1913.		
Hare, Helen (2)	<i>Social Service</i>	Indianapolis.
Ph.B., University of Chicago, 1915.		
Hargrave, Elizabeth Lillian (1)	<i>Special Home Econ.</i>	Richmond, Kan.
B.S., Kansas State Agricultural College, 1917.		
Harman, Paul Montgomery (1)	<i>Physiology</i>	Bloomington.
A.B., Indiana University, 1914; A.M., 1915.		
Harris, Verna Prudence (s)	<i>Mathematics</i>	Bloomington.
A.B., Butler College, 1917.		
Hendren, Edith Eulalia (1,2)	<i>History</i>	Indianapolis.
A.B., Butler College, 1917.		
Hepburn, Samuel Benedict (s)	<i>History</i>	Bloomington.
A.B., Indiana University, 1915; A.M., 1916.		
Herron, Goodsell Warren (s)	<i>Chemistry</i>	Greencastle.
A.B., DePauw University, 1917.		
Hess, John Ambrose (1,2)	<i>German</i>	Bloomington.
A.B., University of Kansas, 1908; A.M., 1910.		
Hightower, Pleasant Roscoe (s,1)	<i>English</i>	Bloomington.
A.B., Indiana Central University, 1914; A.M., Indiana University, 1917.		
Hill, Edith Esther (s)	<i>Mathematics</i>	Brueeville.
A.B., Indiana University, 1916.		
Hisey, Walter Edwin (s)	<i>Education</i>	Sullivan.
A.B., Indiana University, 1912.		
Holiman, Willis Newton (s)	<i>Education</i>	Spencer.
A.B., Indiana University, 1913.		
Holman, Charles Thomas (2)	<i>Philosophy</i>	Bloomington.
A.B., McMaster University, 1909; A.M., 1910; D.B., University of Chicago, 1915.		
Holsen, James Noble (1,2)	<i>Economics</i>	Sumner, Ill.
A.B., Union Christian College, 1915; A.B., Butler College, 1917.		
Hornung, Howard Vincent (s)	<i>Political Science</i>	Hillsdale, Mich.
A.B., Indiana University, 1914.		
Hudelson, Vista Margaret (1,2)	<i>History</i>	Bloomington.
A.B., Indiana University, 1917.		
Hunke, Homer Louis (s)	<i>Education</i>	South Whitley.
A.B., Tri-State College, 1916.		

Hunter, Maud (1,2)	<i>English</i>	Lyons.
A.B., Indiana University, 1916.		
Hunter, Melissa (1,2)	<i>Home Economics</i>	Lyons.
A.B., Indiana University, 1917.		
Inman, Ora Homer (s)	<i>English</i>	Bloomfield.
A.B., Indiana University, 1915.		
Ives, Mabel (s)	<i>English</i>	Frankfort.
A.B., Indiana University, 1915.		
Job, Leonard Bliss (s)	<i>Education</i>	Roachdale.
A.B., Indiana University, 1915.		
Johnson, Nell Lee (1)	<i>Romance Lang.</i>	Bloomington.
A.B., Indiana University, 1917.		
Johnson, Thomas Covington (1,2)	<i>Special History</i>	Bloomington.
A.B., Indiana University, 1917.		
Johnson, Waylan Eugene (1,2)	<i>Comp. Ph.</i>	Bloomington.
A.B., Valparaiso University, 1915; Pg.B., 1916; A.M., Indiana University, 1917.		
Johnston, Eugene Hinrichsen (s)	<i>Latin</i>	Bloomington.
A.B., Indiana University, 1914.		
Jordan, Jacob (s)	<i>Physics</i>	Lafayette.
A.B., Indiana University, 1914.		
Kempf, Gerald Fidelis (1,2)	<i>Physiology</i>	Jasper.
A.B., Indiana University, 1916.		
Kester, Kathryn Mary (s)	<i>English</i>	Terre Haute.
A.B., Indiana State Normal, 1915; A.M., Indiana University, 1917.		
King, Florance Beeson (1)	<i>Special Home Econ.</i>	Richmond.
B.S., University of Illinois, 1914.		
Knollenberg, Margaret Agnes (1,2)	<i>German</i>	Richmond.
A.B., Earlham College, 1910.		
Kodera, Yoshikazu (1)	<i>Economics</i>	Kobe, Japan.
B.S.C., Kwausei Gaknlin College, 1916.		
Kraschin, Walter Walentin (s)	<i>Education</i>	Valparaiso.
B.S., Valparaiso University, 1914; A.B., 1915.		
Kratli, William Frank (s)	<i>Education</i>	Knox.
A.B., Indiana University, 1909; A.M., 1917.		
Leming, Bertha Olive (2)	<i>Social Service</i>	Goodland.
A.B., DePauw University, 1914.		
Line, Talitha Eleanor (s)	<i>English</i>	Marion.
A.B., Indiana University, 1914; A.M., 1917.		
Lyon, Florence (1, 2)	<i>Romance Lang.</i>	Delphi.
A.B., Indiana University, 1916.		
Mangel, Emil Henry (s)	<i>Education</i>	Tell City.
A.B., Indiana University, 1910.		
Mann, Clarence Edward (s)	<i>Political Science</i>	Morristown.
B.S., Central Normal College, 1909; A.B., 1914; A.M., Indiana University, 1917.		
Mark, Clara Gould (1)	<i>Geology</i>	Westerville, Ohio.
A.B., Ohio State University, 1906; A.M., 1910.		
Mayer, Esther Beatrice (1)	<i>English</i>	Bloomington.
A.B., Indiana University, 1916; A.M., 1917.		
McAfee, George Ellsworth (s)	<i>History</i>	Borden.
A.B., Indiana University, 1916.		
Miller, Lettie Almira (s)	<i>Romance Lang.</i>	Pasadena, Cal.
A.B., Indiana University, 1900.		
Miller, Mary Charles (s)	<i>English</i>	Bloomington.
A.B., Indiana University, 1909; A.M., 1912.		
Miller, Zora Helen (1,2)	<i>Education</i>	Bloomington.
A.B., Indiana University, 1904.		
Moore, Bruce Victor (s)	<i>Education</i>	Kokomo.
A.B., Indiana University, 1914; A.M., 1917.		
Morland, John Wallace (s)	<i>History</i>	West Terre Haute.
A.B., Indiana University, 1916; A.M., 1917.		
Morley, Everitt Emerson (s,1,2)	<i>Education</i>	Bloomington.
A.B., Valparaiso University, 1915.		
Morrison, Olin D (s)	<i>History</i>	Burket.
A.B., Wabash College, 1915; A.M., Indiana University, 1917.		

Morrison, Stella W (s)	<i>Social Service</i>	Indianapolis.
A.B., Wellesley College, 1908.		
Mueller, Johanna Caroline (s)	<i>German</i>	Indianapolis.
A.B., Butler College, 1916; A.M., Indiana University, 1917.		
Mulford, Hazel Elizabeth (s)	<i>Special</i>	Milan.
B.S., Moores Hill College, 1915.		
Nelson, Dotson McGinnis (s)	<i>Physics</i>	Clinton, Miss.
B.S., Mississippi College, 1907.		
Nicholson, Thomas Edward (1,2)	<i>Psychology</i>	Bloomington.
A.B., Indiana University, 1915; A.M., 1916.		
Odell, Charles Watters (s)	<i>Education</i>	Bloomington.
A.D., DePauw University, 1911; A.M., 1912.		
Orvis, Mary Burchard (2)	<i>Journalism</i>	Madison, Wis.
A.B., University of Wisconsin, 1907.		
Overman, Frances Dorothy (1)	<i>English</i>	Bloomington.
A.B., Indiana University, 1909.		
Painter, Carl Franklin (s)	<i>History</i>	Middletown.
A.B., Indiana University, 1915.		
Papish, Jacob (s,1,2)	<i>Chemistry</i>	Bloomington.
B.S., Valparaiso University, 1910; A.M., Indiana University, 1917.		
Paterno, Simon Ramos (s,1,2)	<i>Political Science</i>	Bloomington.
A.B., St. Beda College, 1909; LL.B., St. Thomas University, 1915.		
Paulley, Harriet Irene (s)	<i>English</i>	Bloomington.
A.B., Indiana University, 1912.		
Pearson, Helen Lucile (1,2)	<i>Social Service</i>	Indianapolis.
A.B., DePauw University, 1913.		
Peree, Elsie Gertrude (s)	<i>Social Service</i>	Anderson.
Ph.B., University of Chicago, 1913.		
Petty, Alonzo Allen (1)	<i>Anatomy</i>	Kokomo.
A.B., Indiana University, 1917.		
Polk, Mary Aline (s)	<i>English</i>	Vincennes.
A.B., Indiana University, 1915.		
Pollock, Wiley Kendal (s)	<i>German</i>	Ligonier.
A.B., Indiana University, 1917.		
Rawles, Katherine Robb (s)	<i>Romance Lang.</i>	Bloomingtoon.
A.B., Indiana University, 1917.		
Reed, Carolyn Mabel (s)	<i>German</i>	Bloomington.
A.B., Indiana University, 1906.		
Reiff, Cecil Kater (s)	<i>Political Science</i>	North Manchester
A.B., Indiana University, 1915.		
Rice, Emmett Ainsworth (s)	<i>Education</i>	Spencer.
A.B., Indiana University, 1916.		
Rigg, Mary (s)	<i>Home Economics</i>	Bloomington.
A.B., Indiana University, 1915.		
Risinger, Katie Mae (1,2)	<i>Latin</i>	Osgood.
A.B., Moores Hill College, 1916.		
Risley, Lee Harrison (s)	<i>Education</i>	Velpen.
A.B., Indiana University, 1912.		
Roark, Louis (1,2)	<i>Geology</i>	Norman, Okla.
A.B., University of Oklahoma, 1912.		
Rumble, Chester A (s)	<i>Education</i>	Oakland City.
B.S., Oakland City College, 1916.		
Schellschmidt, Olga (s)	<i>English</i>	Indianapolis.
A.B., Indiana University, 1909.		
Shannon, Fred Albert (s)	<i>History</i>	Reelsville.
A.B., Indiana State Normal, 1914.		
Shultz, William Claude (s)	<i>English</i>	Lexington, Ky.
A.B., University of Kentucky, 1911; A.M., 1914.		
Siebenthal, Pauline Margaret (s)	<i>Romance Lang.</i>	Bloomington.
A.B., Indiana University, 1916.		
Sigler, Richard Roberts (1)	<i>Physiology</i>	New Salisbury.
A.B., Indiana State Normal, 1916; A.M., Indiana University, 1917.		
Smith, Cordelia (s,1,2)	<i>English</i>	New Albany.
A.B., Indiana University, 1917.		

Snodgrass, Katherine (s)	<i>Economics</i>	Bloomington.
A.B., Bryn Mawr College, 1915.		
Steele, Herd Cleveland (s)	<i>Chemistry</i>	Clinton, Miss.
B.S., Mississippi College, 1910.		
Stempel, (Mrs.) Myrtle E (1,2)	<i>Special Comp. Ph.</i>	Bloomington.
A.B., Indiana University, 1912; A.M., 1915.		
Stevens, Mary Bertha (s)	<i>Romance Lang.</i>	Columbus.
A.B., Indiana University, 1917.		
Stoddard, Orren Deans (s)	<i>English</i>	Merom.
A.B., Indiana University, 1911.		
Stone, William Herschel (2)	<i>Education</i>	Spencer.
A.B., Indiana University, 1918.		
Summers, Salee Clarencee (1,2)	<i>Pathology</i>	Smith's Grove, Ky
B.S., Indiana University, 1915.		
Suter, Marjorie (s)	<i>English</i>	Laporte.
A.B., Indiana University, 1917.		
Swain, Frances Lucy (s)	<i>Home Economics</i>	Bloomington.
B.S., University of Chicago, 1912; A.M., 1914.		
Thompson, Himer J (s)	<i>Education</i>	Bloomington.
B.S., Central Normal School, 1910; A.B., Indiana University, 1916.		
Turner, James Franklin (s)	<i>Mathematics</i>	Bloomington.
B.S., Western Kentucky State Normal, 1909; A.B., Indiana University, 1917.		
Uphaus, Willard Edwin (1,2)	<i>Education</i>	Ridgeville.
A.B., Indiana University, 1917.		
Venn, Mary Charlotte (1,2)	<i>History</i>	Indianapolis
A.B., Indiana University, 1917.		
Wade, Ernest Evert (s)	<i>Botany</i>	Borden.
A.B., Indiana University, 1917.		
Wallgren, Douglas John (1,2)	<i>Mathematics</i>	Goshen.
A.B., Goshen College, 1917.		
Warren, Don Cameron (s)	<i>Zoölogy</i>	Saratoga
A.B., Indiana University, 1914; A.M., 1917.		
Watkins, Emma Ruth (s)	<i>Latin</i>	Dupont.
A.B., Moores Hill College, 1914.		
Weatherwax, Paul (1,2)	<i>Botany</i>	Bloomington.
A.B., Indiana University, 1914; A.M., 1915.		
Weaver, Sibyl (1,2)	<i>English</i>	Indianapolis.
A.B., Indiana Central University, 1916.		
Wellons, Blanche (s)	<i>English</i>	Bloomington.
A.B., Indiana University, 1914.		
Weybright, Iva Marie (s)	<i>English</i>	Bloomington.
A.B., Indiana University, 1914.		
Whinney, Smiley Massillion (s,1,2)	<i>Education</i>	Warren.
B.S., Marion Normal College, 1911; A.B., Indiana University, 1916; A.M., 1917.		
White, Alverta Louisa (s,2)	<i>English</i>	Merom.
A.B., Union Christian College, 1908.		
Whitted, Estella Mary (s,1)	<i>Special</i>	Bloomington.
A.B., Indiana University, 1901.		
Williams, Edith Cadwallader (1)	<i>Home Economics</i>	Western Springs, Ill.
A.B., Smith College, 1897.		
Wilson, Charles Earl (1,2)	<i>Zoölogy</i>	Brazil.
A.B., Indiana University, 1914; A.M., 1914.		
Wilson, Gordon (1)	<i>English</i>	Bloomington.
Life Diploma, Western Kentucky State Normal, 1913; A.B., Indiana University, 1915.		
Winters, Matthew (s)	<i>Anatomy</i>	Poseyville.
A.B., Indiana University, 1915; A.M., 1917.		
Wolfe, Harold Eichholtz (1,2)	<i>Mathematics</i>	North Manchester.
A.B., Indiana University, 1913; A.M., 1914.		
Wright, Emerson Blaine (1,2)	<i>Education</i>	Bloomington.
A.B., Indiana University, 1913.		
Ziegler, Lloyd Hiram (s)	<i>Psychology</i>	Bippus.
A.B., Indiana University, 1914; A.M., 1916.		
Zimmerman, Charles (s)	<i>History</i>	North Vernon.
A.B., Indiana State Normal, 1912; A.M., Indiana University, 1916.		
Zimmerman, Everett Edward (s)	<i>Physics</i>	Farmland City of Indiana.
B.S., Valparaiso University, 1912; A.B., Indiana University, 1916.		

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Vol. XVII }
No. 5 }

INDIANA UNIVERSITY BULLETIN
(OFFICIAL SERIES)

{ APRIL 15
1919

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INDIANA UNIVERSITY GRADUATE SCHOOL



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Announcements, 1919-20

1919

APRIL							MAY							JUNE						
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1920

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30	31	30	31	30	31

Session days of first and second semesters in bold faced figures. Days of summer session, 1919 (except *special* schedules of the School of Education, of the School of Medicine, the School of Law, and of the Biological Station), are in *italic*.

University Calendar

SUMMER SESSION, 1919

<i>June 12, Thursday.</i>	Registration and enrollment in classes.
<i>June 13, Friday.</i>	Recitations and lectures begin.
<i>August 8, Friday, 5 p.m.</i>	Summer session ends.

*SPECIAL SCHEDULES OF THE SCHOOL OF EDUCATION.—Courses for Class A and Class B teachers begin Monday, June 9, and end Friday, August 22 (including 5 Saturdays). Classes are held on the following Saturdays: July 12, 19, August 2, 9, and 16. Research courses continue from June 9 until August 22.

SCHOOL OF LAW.—Courses begin June 9 and end August 22.

SCHOOL OF MEDICINE.—At Indianapolis dispensary courses continue thruout the summer.

BIOLOGICAL STATION (at Winona Lake, Ind.)—Opens Saturday, June 14, and closes Friday, August 15. First half closes July 19, and second half begins July 12.

REGULAR SESSION, 1919-20

FIRST SEMESTER

<i>Sept. 15 and 16, Monday and Tuesday.</i>	Matriculation and registration; examinations for admission.
<i>September 16, Tuesday.</i>	Enrollment in classes.
<i>September 17, Wednesday.</i>	Recitations and lectures begin.
<i>Nov. 27 and 28, Thursday and Friday.</i>	Thanksgiving recess.
<i>December 19, Friday, 4 p.m., to Dec. 31, Wednesday.</i>	Christmas recess.
<i>January 1, Thursday, 8 a.m.</i>	Work resumed.
<i>January 20, Tuesday.</i>	Foundation Day: a holiday.
<i>January 24, Saturday.</i>	Final examinations begin.
<i>January 29, Thursday, 5 p.m.</i>	First semester ends.

SECOND SEMESTER

<i>Feb. 2, 3, Monday and Tuesday.</i>	Matriculation and registration.
<i>February 3, Tuesday.</i>	Enrollment in classes.
<i>February 4, Wednesday.</i>	Recitations and lectures begin.
<i>April 1, Thursday, 4 p.m.</i>	Spring vacation begins.
<i>April 6, Tuesday, 8 a.m.</i>	Work resumed.
<i>April 6, Tuesday.</i>	Enrollment for spring half-semester.
<i>June 1, Tuesday.</i>	Final examinations begin.
<i>June 5, Saturday, 5 p.m.</i>	Second semester ends.
<i>June 9, Wednesday.</i>	Commencement.

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Prefatory Note

INDIANA UNIVERSITY is the State University of Indiana, and the head of the public school system of the state. It takes its origin from the State Seminary, which was established by act of the legislature, approved January 20, 1820. In 1828 the title of the Seminary was changed by the legislature to that of the Indiana College, and in 1838 the University was given its present name. In 1867 Indiana University became coeducational.

The University comprises the following schools:

The College of Liberal Arts, founded as the Indiana Seminary in 1820.

The School of Law, organized in 1842 and reorganized in 1889.

The School of Medicine, organized in 1903, and reorganized in 1908.

The Training School for Nurses, established in the fall of 1914.

The Graduate School, organized in 1904.

The School of Education, organized in 1908.

The Extension Division, organized in 1912.

The Summer Session, organized in 1890, reorganized in 1900.

The first advanced degrees conferred for graduate work were granted in 1882. In 1904, there took place the segregation and formal organization of the Graduate School, and in 1908 the office of Dean of the Graduate School was created.

This number of the *Bulletin* is devoted to setting forth the facilities for graduate work in the several departments of the University.

For further information concerning the Graduate School, address,

THE DEAN OF THE GRADUATE SCHOOL,
Bloomington, Indiana.

Officers and Faculty of the Graduate School

GRADUATE COUNCIL

- *CARL H EIGENMANN, Ph.D., Dean of the Graduate School, and Professor of Zoölogy.
- JAMES ALBERT WOODBURN, Ph.D., LL.D., Professor of American History.
- ROBERT EDWARD LYONS, Ph.D., Professor of Chemistry.
- ARTHUR LEE FOLEY, Ph.D., Professor of Physics, and Waterman Research Professor, 1917-19.
- DAVID MYERS MOTTIER, Ph.D., Professor of Botany.
- ULYSSES GRANT WEATHERLY, Ph.D., Litt.D., Professor of Economics and Sociology.
- BURTON DORR MYERS, A.M., M.D., Secretary of the School of Medicine at Bloomington, and Professor of Anatomy.
- CARL WILHELM FERDINAND OSTHAUS, A.M., Professor of German.
- DAVID ANDREW ROTHROCK, Ph.D., Professor of Mathematics.
- WILLIAM J MOENKHAUS, Ph.D., Professor of Physiology.
- ALFRED MANSFIELD BROOKS, A.M., Professor of Fine Arts.
- WILLIAM DAVID HOWE, Ph.D., Director of the Summer Session, and Professor of English.
- WILLIAM FREDERICK BOOK, Ph.D., Professor of Educational Psychology, and Director of the Psychological Laboratory.
- EDGAR ROSCOE CUMINGS, Ph.D., Acting Dean of Graduate School, and Professor of Geology.
- SELATIE EDGAR STOUT, Ph.D., Assistant Dean of the College of Liberal Arts, and Professor of Latin.
- WILLIAM WESLEY BLACK, A.M., Acting Dean of the School of Education, and Professor of Elementary Education.
- JOSEPH WILLIAM PIERCY, A.B., Professor of Journalism.
- ELIJAH CLARENCE HILLS, Ph.D., Professor of Romance Languages.
- FRANK WILLIAM TILDEN, A.M., Associate Professor of Greek.
- GUIDO HERMANN STEMPLE, A.M., Associate Professor of Comparative Philology.
- WILBURADELMAN COGSHALL, A.M., Associate Professor of Astronomy.
- FRANK GREENE BATES, Ph.D., Associate Professor of Political Science, and Secretary of the Graduate Council.

FACULTY OF THE GRADUATE SCHOOL

- WILLIAM LOWE BRYAN, Ph.D., LL.D., President of the University.
- HORACE ADDISON HOFFMAN, A.M., Professor of Greek.
- JAMES ALBERT WOODBURN, Ph.D., LL.D., Professor of American History.
- *CARL H EIGENMANN, Ph.D., Professor of Zoölogy.
- ROBERT EDWARD LYONS, Ph.D., Professor of Chemistry.
- ARTHUR LEE FOLEY, Ph.D., Professor of Physics, and Waterman Research Professor, 1917-19.

* Relieved of teaching duties from August 1, 1918, to August 1, 1919. Absent on leave from August 1, 1918.

- DAVID MYERS MOTTIER, Ph.D., Professor of Botany.
- ULYSSES GRANT WEATHERLY, Ph.D., Litt.D., Professor of Economics and Sociology.
- BURTON DORR MYERS, A.M., M.D., Professor of Anatomy.
- *AMOS SHARTLE HERSEY, Ph.D., Professor of Political Science and International Law.
- †BERT JOHN VOS, Ph.D., Professor of German.
- WILLIAM A RAWLES, Ph.D., Professor of Political Economy.
- CARL WILHELM FERDINAND OSTHAUS, A.M., Professor of German.
- SCHUYLER COLFAX DAVISSON, Sc.D., Professor of Mathematics.
- DAVID ANDREW ROTHROCK, Ph.D., Professor of Mathematics.
- WILLIAM J MOENKHAUS, Ph.D., Professor of Physiology.
- LOUIS SHERMAN DAVIS, Ph.D., Professor of Chemistry.
- ALFRED MANSFIELD BROOKS, A.M., Professor of Fine Arts.
- WILL DAVID HOWE, Ph.D., Professor of English.
- WILLIAM WESLEY BLACK, A.M., Professor of Elementary Education.
- WILLIAM FREDERICK BOOK, Ph.D., Professor of Educational Psychology, and Director of the Psychological Laboratory.
- CHARLES JACOB SEMBOWER, Ph.D., Professor of English.
- EDGAR ROSCOE CUMINGS, Ph.D., Professor of Geology.
- SELATIE EDGAR STOUT, Ph.D., Professor of Latin.
- WILLIAM BAIRD ELKIN, Ph.D., Professor of Philosophy.
- JOSEPH WILLIAM PIERCY, A.B., Professor of Journalism.
- ‡HENRY LESTER SMITH, Ph.D., Professor of School Administration.
- §JOSEPH ABRAHAM WILLIAMS, A.M., Acting Professor of Psychology.
- PAUL LELAND HAWORTH, Ph.D., Acting Professor of History.
- EDWIN AUGUSTUS LEE, A.M., Professor of Vocational Education.
- HUBERT GUY CHILDS, Ph.D., Professor of Secondary Education.
- JOHN BURTON PHILLIPS, Ph.D., Professor of Economics and Sociology.
- ELIJAH CLARENCE HILLS, Ph.D., Professor of Romance Languages.
- WALTER SCOTT MONROE, Ph.D., Professor of Education.
- WILLIAM NEWTON LOGAN, Ph.D., Professor of Economic Geology.
- GEORGE DAVIS MORRIS, Dr.d'U. (Paris), Associate Professor of French.
- FRANK WILLIAM TILDEN, A.M., Associate Professor of Greek.
- GUIDO HERMANN STEMPFL, A.M., Associate Professor of Comparative Philology.
- CHARLES ALFRED MOSEMILLER, A.B., Associate Professor of Romance Languages.
- ROLLA ROY RAMSEY, Ph.D., Associate Professor of Physics.
- OLIVER W BROWN, A.M., Associate Professor of Chemistry.
- FRANK MARION ANDREWS, Ph.D., Associate Professor of Botany.
- LILLIAN GAY BERRY, A.M., Associate Professor of Latin.
- HENRY THEW STEPHENSON, B.S., A.B., Associate Professor of English.
- WILBUR ADELMAN COGSHALL, A.M., Associate Professor of Astronomy.
- ULYSSES SHERMAN HANNA, Ph.D., Associate Professor of Mathematics.
- FRANK GREENE BATES, Ph.D., Associate Professor of Political Science.

* Absent on leave from August 1, 1918.

† Absent on leave from November 13, 1918.

‡ Absent on leave from September, 1918, to September, 1919.

§ Resigned, resignation to be effective in June, 1919.

- FRANK CURRY MATHERS, Ph.D., Associate Professor of Chemistry.
 CLARENCE EARL MAY, Ph.D., Associate Professor of Chemistry.
 FERNANDUS PAYNE, Ph.D., Associate Professor of Zoölogy.
 MABEL THACHER WELLMAN, A.B., Associate Professor of Home Economics.
 EDNA GERTRUDE HENRY, Ph.D., Director of Social Service (Indianapolis).
 JOHN BENJAMIN DUTCHER, Ph.D., Associate Professor of Physics.
 JOHN HILL, Ph.D., Associate Professor of Spanish.
 GEORGE FULLMER REYNOLDS, Ph.D., Associate Professor of English.
 GARLAND GREEVER, Ph.D., Associate Professor of English.
 JACOB A BADERTSCHER, Ph.D., Associate Professor of Anatomy.
 JAMES M VAN HOOK, A.M., Assistant Professor of Botany.
 WILL SCOTT, Ph.D., Assistant Professor of Zoölogy.
 ROBERT ELISHA BURKE, A.M., Assistant Professor of Fine Arts.
 ELIZABETH SAGE, B.S., Assistant Professor of Home Economics.
 ALBERT LUDWIG KOHLMEIER, A.M., Assistant Professor of History.
 *KENNETH POWERS WILLIAMS, Ph.D., Assistant Professor of Mathematics.
 †JAMES GROVER McDONALD, A.M., Assistant Professor of History.
 ‡JOSEPH ALEXANDER WRIGHT, A.B., Assistant Professor of Journalism.
 FRANK C SENOUR, A.M., Assistant Professor of English.
 CLARENCE EDMUND EDMONDSON, Ph.D., Assistant Professor of Physiology.
 LOGAN ESAREY, Ph.D., Assistant Professor of Western History.
 WILL TALIAFERRO HALE, Ph.D., Assistant Professor of English.
 CLYDE ARNETT MALOTT, A.M., Assistant Professor of Geology.
 WILLIAM H SCHEIFLEY, Ph.D., Assistant Professor of Romance Languages.
 STEPHEN SARGENT VISHER, Ph.D., Assistant Professor of Geology.
 TOBIAS DANTZIG, Ph.D., Instructor in Mathematics.
 GEORGE CLYDE HALE, A.M., Instructor in Chemistry.
 JAMES ERNEST MOFFAT, A.M., Instructor in Economics and Sociology.
 KATE DAUM, A.M., Instructor in Home Economics.
 MARY BERTHA STARK, A.M., Instructor in Zoölogy.

AFFILIATED RESEARCH PROFESSORS IN PHYSICS

* To promote the physics research work in Indiana the physics departments of some of the colleges of the state have effected an affiliation with the Physics Department of Indiana University. Professor Arthur L. Foley, Waterman Research Professor of Physics, becomes Director of Physics Research in the affiliated schools. The following have been appointed Affiliated Research Professors in Indiana University.

JOSEPH P NAYLOR, Professor of Physics in DePauw University.

M.S., Indiana University, 1885.

EDGAR KINCAID CHAPMAN, Professor of Physics in Wabash College.

A.B., Oberlin College, 1903; M.S., Chicago University, 1910.

EDWIN MORRISON, Professor of Physics in Earlham College.

B.S., Earlham College, 1888; M.S., Earlham College, 1891.

* Absent on leave in the military service.

† Absent on leave from August 1, 1918.

‡ Absent on leave in military service during the fall and winter terms.

General Statement

Purpose and Administration. The Graduate School furnishes opportunities for advanced work leading to careers in higher education and in certain lines of investigation. It does not offer work leading to professional degrees in law or in medicine.

The work of the School is a direct continuation of that of the College of Liberal Arts; and as such it is the most advanced work in education undertaken by the state.

The School is administered by the Council of the Graduate School, composed of members of the Faculty representing different fields of learning.

Admission. Students holding a Bachelor's degree in Arts, or in Science, from Indiana University, or the same degree, or its equivalent, from institutions of similar rank, are admitted to the Graduate School on presentation of satisfactory credentials, which should include a certificate of graduation and a transcript of the college record. Persons holding the Bachelor's degree from institutions whose requirements are considered to lack a year, or more, of being the equivalent of the A.B. degree from this institution, are not admitted to the Graduate School. They may enter the College of Liberal Arts and are referred to the Dean of the College for their standing. Holders of the A.B. degree, or its equivalent, from institutions whose requirements lack less than a year of being the equivalent of the A.B. degree from this institution may be admitted to the Graduate School. In such cases, work in addition to the minimum of thirty hours for the A.M. degree will be required. The amount will be determined in each case by the Council of the Graduate School. In all cases, the student must complete to the satisfaction of the department of the major subject the graduate work required in that department for the A.M. or the Ph.D. degree.

All graduate students will enroll at the beginning of each semester, and those entering regularly organized classes will submit to the same regulations as undergraduate students. Work will in many cases be individual and not controlled by a recitation schedule. At the time of entrance to the Graduate School the student must submit a plan of the entire work he wishes to present for the Master's or Doctor's degree. This plan must be approved by the professor of the major subject and the Dean of the Graduate School. Graduate work done before filing such plan will ordinarily not be counted toward advanced degrees.

The Library. The Library of Indiana University at present contains 128,100 cataloged volumes. The selection of these books has been made with a view to facilitating instruction and research. The collection is a well balanced one, but is especially strong in literary and scientific

periodicals. The list of periodicals received and permanently kept on file by the library numbers about four hundred, and includes American, English, German, French, and, to a less extent, Italian, Spanish, and Swedish publications. The library is made thoroly usable by a carefully prepared card catalog, by indexes, and by other bibliographical aids.

In the library building are seminary rooms for the Departments of History, Economics and Sociology, Philosophy, German, Romance Languages, Latin, Greek, and Political Science.

In addition to the central library, where the general literary and historical collections are housed, there are nine departmental collections, of varying sizes, kept in the different University buildings.

All books, with the exception of periodicals and books reserved for reference, may be drawn for home use. Each student may draw books for two weeks, with privilege of renewal, but subject to recall.

The library is open Monday to Friday, from 7:45 a.m. to 10 p.m., and on Saturdays from 8 a.m. to 5 p.m.

Fees. Students who are legal residents of the state of Indiana are charged a Contingent fee of \$9 a semester, and a Library fee of \$1.50 a semester. These fees cover in part the cost of the physical maintenance of the University; they are not applied to the cost of tuition, which is provided wholly by the state.

Students not legal residents of the state of Indiana will be charged a Contingent and Library fee amounting to \$30 a semester. The Summer session fee is \$15, irrespective of the length of the course, except that for each half-session's work in law \$10 is charged.

The Laboratory fees in all courses are uniformly \$1.50 a credit hour,* except in the School of Medicine (see heading School of Medicine in the University Catalog, or the Bulletin of the School of Medicine), and for courses in domestic art, for which a fee of \$1 a semester is charged.

A Gymnasium fee of \$2 a semester is charged all students who take work in physical education.

An Examination fee of \$1 is charged for each make-up or special examination. This fee is paid to the Bursar; his receipt, when presented to the proper instructor, constitutes the authorization for holding the examination.

The fee for any Degree is \$5, and must be paid to the Bursar of the University at least thirty days before graduation.

DEGREES

Three advanced degrees, Master of Arts, Master of Science, and Doctor of Philosophy, are conferred by the University.

Master of Arts. The degree Master of Arts may be conferred upon Bachelors of Arts of this University, or of any other institution of equivalent standing, or upon Bachelors of Science provided this degree

* Because of the increased cost of chemicals and certain other laboratory supplies, due to the war, the laboratory fees have been increased to \$2 a credit hour in the Department of Chemistry.

is an alternative equivalent of the A.B. degree, following a residence at the University of a minimum of two semesters and the completion of a minimum of thirty hours of University credit; and in addition the passing of an oral examination on the work taken for the degree, when required by the major department.

Credit earned in excess of that required for the A.B. or the B.S. degree, before the degree is conferred or a certificate of the completion of the work for the degree is issued, is not counted toward the A.M. degree without special action of the Graduate Council before the work is done.

Twenty of the total of thirty hours required for the A.M. degree must be in one department, or in closely allied departments. Ten hours must be distinctly graduate in character. There is no restriction as to the amount of work that may be carried during any semester.

The work for the A.M. degree may all be done in summer sessions, provided that the work for the degree be completed within five years.

Professional studies are not accepted for the graduate degrees, but research work on professional subjects may be accepted for these degrees at the option of the professor in charge of the major subject.

A thesis is required in all departments except in the Departments of English and Latin.

Freshman courses will not be counted on advanced degrees.

The first ten hours in beginning French and German do not count on advanced degrees except by permission of the Graduate Council, on the written recommendation of the professor in charge of the major subject. The Council shall in such cases fix the amount of credit to be given. The amount of credit that a student may receive for elementary courses in other subjects is determined by the professor in charge of the major subject.

It is strongly urged that all students gain some proficiency in foreign modern language before entering the Graduate School. Credit in ten hours in foreign modern language, or the certified equivalent, is required of candidates for the A.M. degree. If the candidate does not meet this requirement before entering the Graduate School, he must obtain credit for ten hours of foreign language in addition to the regular thirty hours required for the A.M. degree, unless by special act of the Graduate Council partial credit is allowed for this work in accordance with the provisions noted in the preceding paragraph.

Master of Science. The degree Master of Science may be conferred upon Bachelors of Science of Indiana University under the same conditions upon which the degree of Master of Arts is conferred on Bachelors of Arts.

Doctor of Philosophy. The degree Doctor of Philosophy may be conferred upon graduates of this University, or of any institution of similar character and rank, upon the completion of an advanced course of study of not less than three years.

Each candidate for this degree will select a major subject consisting of the work of some one department or recognized subdivision of a department; and not less than two minors, at least one of which must be

in some department related to, but distinct from, that of the major subject.

The course for the degree will be pursued under the direction of a committee consisting of the heads of the departments in which the work is done. Its value will be determined by a final examination, and by the presentation of a satisfactory thesis. The thesis should usually embody original work upon some prescribed or accepted subject; it must always give evidence that the candidate is capable of forming an independent judgment upon the recent literature of his department.

A detailed statement of the work offered for the degree, indorsed by the professor in charge of the major subject, must be submitted to the Council of the Graduate School not later than May 10 of the year in which the candidate presents himself for examination.

On the recommendation of the professor in charge of the major subject, and with the concurrence of the Council of the Graduate School, part of the three years' study required for this degree may be spent in residence at other universities.

The thesis of every candidate for the Doctor's degree shall be presented to the Council of the Graduate School on or before the first day of June of the year in which he is a candidate for the degree. The thesis must be indorsed by the head of the department as being in its final form, and ready for the press. If the candidate is recommended for the degree, arrangements must be made to deposit five printed copies of the thesis in the library.

The examination of each candidate for this degree will be conducted by a committee consisting of all the instructors under whom graduate work has been taken, in the presence of such members of the Faculty of the Graduate School as care to attend.

At least one year before the final examination the candidate shall satisfy the professor in charge of the major subject of his ability to use French and German for purposes of investigation.

Application for Degrees. Application for an advanced degree must be filed with the Dean at the time of admission of the candidate to the Graduate School. Application for the Doctor's degree must be on file at least one year before the candidate is admitted to the examination.

FELLOWSHIPS

University Fellowships. A number of University fellowships are available for graduate students who have had at least a year of graduate work. These fellowships carry with them an honorarium of between \$300 and \$500 annually. The highest amount will ordinarily be paid only if the incumbent is appointed for a third year. A fellowship is a recognition of scholarship. A portion of the fellow's time may be required in the service of the department in which he is appointed. Appointments are for one year.

Lawrence Fellowship in Astronomy. The Lawrence Fellowship of the Department of Astronomy has been established by Mr. Percival Lowell, of the Lowell Observatory, upon the following terms and conditions:

1. The fellowship shall be known as the Lawrence Fellowship, in remembrance of the donor's mother, and is established in perpetuity, revocable, however, at any time at the will of the founder.

2. It shall be annually available and shall cover the college calendar year, that is, from Commencement to Commencement of the same.

3. The applicant shall be appointed by the Department, the donor reserving the right of finally passing upon the suitability of the candidate so presented.

4. The fellow shall be given time and opportunity for an original thesis on some astronomical subject looking to the taking of a Master's degree, the nature of which shall be decided by the Director and the fellow. But the fellow shall be expected to give general assistance in the work of the Observatory during the period of his fellowship.

5. The fellowship will pay \$600 and the fellow's traveling expenses to and from the Observatory at Flagstaff, Ariz., and a furnished room at the Observatory shall be free to the fellow's use.

Special Fellowships. There are besides the fellowships mentioned above, three special fellowships ranging in value from \$500 to \$1,000. These fellowships are created only for persons of exceptional ability and merit, who may or may not have received the Ph.D. degree.

Scholarships for Graduates of Other Indiana Colleges.* The Trustees of Indiana University, at their March meeting, 1910, established ten graduate scholarships of an annual value of \$200 each, to be held by graduates of other colleges in the state. In awarding these scholarships the policy is to assign them to the most promising students, irrespective of the special field of study in which they wish to work, or the particular institutions from which they come. As between cases of equal merit, however, attention is given to securing a distribution of the awards among different departments of study and different colleges of the state.

Applicants for these scholarships should file a statement of their educational history and of their plans with the Dean of the Graduate School. They should indicate in this statement the major subject which they wish to pursue, and give a transcript of their college record. They should also present at this time recommendations from their instructors, and such other evidences of their fitness as they can offer. Applications will be received up to March 1 of each year.

Applications are referred in each case to the department concerned for a decision upon the respective merits of the applicants in that department. On the basis of the departmental reports, the Graduate Council recommends to the Trustees the most eligible candidate for appointment.

These scholarships are not open to students doing professional work in law or in medicine.

For application blanks, and further information, address the Dean of the Graduate School.

Special Rules Concerning Fellows and Scholars. Holders of fellowships and scholarships may be required to render some service to the

* Discontinued during 1919-20.

University and are not permitted, without the special permission of the Graduate Council, to do other work for remuneration.

All fellows and scholars are exempted from the payment of Contingent, Library, and regular Laboratory fees.

WATERMAN INSTITUTE FOR SCIENTIFIC RESEARCH

At a meeting of the Trustees of the University on May 12, 1915, Dr. Luther Dana Waterman,* Professor Emeritus of Medicine in the Indiana University School of Medicine, presented to the Trustees deeds for property amounting in value to \$100,000, on the following conditions:

1. That he shall retain the management and income from the property during his lifetime.
2. That the proceeds from the property be devoted to the establishment and permanent maintenance of an Institute for Scientific Research.
3. That the Trustees bind themselves to appropriate annually an amount of money for the Institute equal to the annual proceeds from the property.

The Trustees accepted the proposal of Dr. Waterman in the following terms: "Resolved, That the generous gift of Dr. Luther D. Waterman to the University for the purpose therein stated be and is hereby accepted with the thanks of the Board. We hereby pledge the faith of the institution to carry out the conditions therein contained."

At a meeting of the Trustees of the University in October, 1917, it was decided to inaugurate the work of the Institute at once. Arthur L. Foley, Professor of Physics in Indiana University, was elected Waterman Research Professor and given full time for the work. He served also in 1918-19. (See Affiliated Research Professors, p. 9.)

* Died June 30, 1918.

Courses in the Graduate School

**In the following announcement of courses the Roman numerals I and II indicate whether a course is given in the first or second semester, respectively. The letters *a* and *b* used in a course number indicate which half (or semester) of the year's work is being announced if the course is one which is given throughout the University year. University credit is reckoned in semester hours, indicated in parentheses by the abbreviation "cr."

DEPARTMENT OF ANATOMY

Professor MYERS; Associate Professor BADERTSCHER.

The following are the courses open to graduate students in the Department of Anatomy.

13. Research Work. Opportunity for research work is offered to advanced students who may have at least one-half their time for one year free for the work. I, II. Hours to be arranged.
Mr. MYERS, Mr. BADERTSCHER.
15. Advanced Course in Anatomy. Open to students who have completed the dissection of the human body, and Course 8. I, II. Hours to be arranged. Mr. MYERS, Mr. BADERTSCHER.
16. Seminary. I, II. Days and hours to be arranged. (2 cr.)
Mr. MYERS, Mr. BADERTSCHER.

DEPARTMENT OF ASTRONOMY

Associate Professor COGSHALL.

Graduate work in this Department is partially provided for by the Lawrence Fellowship in Astronomy, described on page 13 of this bulletin. Other work of a graduate nature carried on at the University is included under the courses described below.

For a description of Kirkwood Observatory and its equipment see the University Catalog.

13. Astronomical Research. I, II. Days, hours, and credit to be arranged.
Mr. COGSHALL.
14. Orbits of Spectroscopic Binaries. II. Days, hours, and credit to be arranged.
Mr. COGSHALL.

DEPARTMENT OF BOTANY

Professor MOTTIER; Associate Professor ANDREWS; Assistant Professor VAN HOOK.

The following courses are open to graduate students in the Department of Botany:

4. Morphology of Fungi. I. Daily, 1-3. (5 cr.) Repeated II.
Mr. VAN HOOK.
5. Plant Physiology. I. Daily, 1-3. (5 cr.) Repeated II.
Mr. ANDREWS.
6. Cytology. I. Daily, 1-3. (5 cr.) Mr. MOTTIER.
- 5A. Research in Physiology. I, II. Days and hours to be arranged.
Mr. ANDREWS.
7. Research in Morphology and Cytology. I, II. Daily, at hours
to be arranged. Mr. MOTTIER.
13. Morphology of the Algae. I, II. Daily, at hours to be arranged.
Mr. MOTTIER.
18. Investigations in Mycology and Plant Pathology. I, II. Daily,
1-3. Mr. VAN HOOK.
21. Evolution and Heredity. A study of elementary principles;
present-day views of Mendelism, natural selection, mutation,
and plant improvement. Lectures and reading. Given in
connection with Zoölogy 32 in second semester. II, and sum-
mer session. At an hour to be appointed. Mr. WEATHERWAX.
22. Research on Grasses. Problems of research on the classification
and morphology of the grasses and on certain physiological
phenomena that can be studied most advantageously in the
grasses. I, II. Daily, 8-5. Mr. WEATHERWAX.

DEPARTMENT OF CHEMISTRY

Professors LYONS, DAVIS; Associate Professors BROWN, MATHERS, MAY;
Instructor HALE*.

Special attention is given to inorganic, organic, physiological, and physical chemistry, and to electrochemistry, technical analytical chemistry, and electrometallurgy.

The graduate work of the Department of Chemistry, leading to the A.M. and Ph.D. degrees, comprises advanced laboratory, lecture, library, and seminary work in the lines indicated above, and special graduate courses described below. A thesis embodying original investigation is required for an advanced degree.

Courses 50, 51, 52, 53 are offered in the summer session of 1919.

* Absent on leave in the military service from December 1, 1917.

The laboratories for advanced work and the departmental library are open from 8 a.m. to 5 p.m. There are no classes in the laboratories; each student works independently.

19. Physical Chemistry. Laboratory work. I. Laboratory open daily, 8-5. Hours to be arranged. Repeated II and summer session, 1919. Mr. BROWN.
22. Electrochemistry. II. Lectures (A), M.W., at 8; laboratory (B), T.Th.F., 1-5. (22A, 2 cr.; 22B, 1 or more cr.) Mr. BROWN.
15. Advanced Technical and Engineering Analysis. II. Laboratory open daily, 8-5. Hours to be arranged. Repeated summer session, 1919. Mr. MATHERS.
32. Gas and Fuel Analysis. II. Lectures (A), T., at 1; laboratory (B), at hours to be arranged. (2 cr.) Mr. MATHERS.
33. Spectrum Analysis and Sugar Analysis. I (first thirteen weeks). Lectures (A), F., at 1; laboratory (B), at hours to be arranged. (2 cr.) Mr. MATHERS.
26. Chemical Engineering. I. M.W.F., at 11. (3 cr.) Mr. BROWN.
14. Seminary: Inorganic Chemistry, Organic Chemistry, Electrochemistry, and Industrial Chemistry. I, II. Th., at 7 p.m. Mr. LYONS, Mr. BROWN, Mr. MATHERS, Mr. MAY.
50. Research: Organic or Physiological Chemistry. I, II. Hours to be arranged. Mr. LYONS, Mr. MAY.
51. Research: Chemistry of the Alkaloids. I, II. Hours to be arranged. Mr. DAVIS.
52. Research: Electrochemistry, Electrometallurgy, and Physical Chemistry. I, II. Hours to be arranged. Mr. BROWN.
53. Research: Inorganic Chemistry. I, II. Hours to be arranged. Mr. MATHERS.
24. Advanced Electrochemistry and Electrometallurgy. I, II. Lectures (A), F., at 8 (second semester); laboratory (B), at hours to be arranged. Mr. BROWN.
25. Advanced Organic Chemistry. I, II. Lectures (A), T.Th., at 11 (first semester); laboratory (B), at hours to be arranged. Mr. MAY.
13. Elementary Metallurgy and Assaying. I. Lectures (A), M.W., at 8; laboratory (B), open F., 8-5. (3 cr.) Mr. BROWN.
29. Storage Batteries. I. Lectures (A), F., at 8; laboratory (B), one or more periods a week. Mr. BROWN.
31. Advanced Inorganic Chemistry. I, II, and summer session, 1919. Laboratory open daily, 8-5. Hours to be arranged. Mr. MATHERS.

DEPARTMENT OF COMPARATIVE PHILOLOGY

Associate Professor STEMPLE.

The graduate courses offered below will be extended as required. They may be supplemented by certain of the courses listed as undergraduate, as well as by certain courses given in the other language departments and in the Departments of Economics and Sociology (Descriptive Sociology), History, Philosophy, and English.

- [5. Comparative Philology of the Classical Languages. I, II. M.W.F., at an hour to be appointed. (6 cr.) Mr. STEMPLE.] Omitted in 1919-20.
- 4. Gothic. I, II. T.Th., at 11. (4 cr.) Mr. STEMPLE.
- [8. Sanskrit. I, II. M.W.F., at 10. (6 cr.) Mr. STEMPLE.] Omitted in 1919-20.
- [9. Old High German. I, II. T.Th., at 11. (4 cr.) Mr. STEMPLE.] Omitted in 1919-20. Given in alternate years with Course 4.
- [10. Middle High German. I, II. T.Th., at an hour to be appointed. (4 cr.) Mr. STEMPLE.] Omitted in 1919-20.
- [11. Old Icelandic. I, II. M.W.F., at 9. (6 cr.) Mr. STEMPLE.] Omitted in 1919-20.
- 15. Seminary in Historical English Grammar. I, II. W., 2-4. Mr. STEMPLE.

DEPARTMENT OF ECONOMICS AND SOCIOLOGY

Professors WEATHERLY, RAWLES, PHILLIPS; Instructor MOFFAT.

The following courses are open to graduate students in the Department of Economics and Sociology:

- 3a. Public Finance. I. M.W.F., at 10. (3 cr.) Mr. PHILLIPS.
- 3b. Special Tax Problems. II. M.W.F., at 10. (3 cr.) Mr. PHILLIPS.
- 9. Transportation. II. M.W.F., at 9. (3 cr.) Mr. RAWLES.
- 28. Insurance. II. T.Th., at 9. (2 cr.) Mr. RAWLES.
- 5. Advanced Political Economy. II. M.W.F., at 11. (3 cr.) Mr. MOFFAT.
- 17a. Domestic Trade. I. T.Th., at 11. (2 cr.) Mr. MOFFAT.
- 17b. Foreign Trade. II. T.Th., at 11. (2 cr.) Mr. MOFFAT.
- 12. Labor Problems. II. T.Th., at 9. (2 cr.) Mr. PHILLIPS.
- 20. Descriptive Sociology. (a) Social evolution. (b) Social assimilation. I, II. T.Th., at 10. (4 cr.) Mr. WEATHERLY.

4. Social Pathology. (a) Poverty and charities. (b) Crime and penology; child problems. I. II. M.W.F., at 2. (6 cr.) Mr. WEATHERLY.
- 10a. Socialism. I. T.Th., at 2. (2 cr.) Mr. WEATHERLY.
- 10b. Methods of Social Reconstruction. II. T.Th., at 2. (2 cr.) Mr. WEATHERLY.
7. Principles of Sociology. (a) Social forces. (b) Social efficiency. I, II. M.W.F., at 10. (6 cr.) Mr. WEATHERLY.
30. Graduate Seminary. I, II. At hours to be appointed.
Mr. WEATHERLY, Mr. RAWLES, Mr. PHILLIPS.

DEPARTMENT OF ENGLISH

Professors HOWE, SEMBOWER; Associate Professors STEPHENSON, REYNOLDS, GREEVER; Assistant Professors SENOUR, HALE.

The Department of English is prepared to offer research work leading to the A.M. and Ph.D. degrees, in the following periods: Elizabethan Literature, the literature of the seventeenth century, of the eighteenth century, and of the first half of the nineteenth century.

For the A.M. degree, the candidate should have had in his undergraduate work the equivalent of thirty hours of English, and should, in his graduate work, pursue a course restricted to three subjects, approved by the Department.

For the Ph.D. degree, the candidate will be expected to do at least two full years' work in residence after the Master's degree. He must be able to do a piece of independent research which will be acceptable to the Department.

The following courses are open to graduate students in the Department of English:

50. The Nineteenth-Century Romantic Poets. I, II. M.W.F., at 8. (6 cr.) Mr. GREEVER.
51. Literary Problems. I, II. T.Th., at 11. (4 cr.) Mr. REYNOLDS.
52. The Elizabethan Drama. I, II. T.Th., at an hour to be appointed. (4 cr.) Mr. REYNOLDS.
53. Shakspere. I. M.W.F., at 10. (3 cr.) Mr. STEPHENSON.
54. Eighteenth-Century Problems. I, II. Two hours each week. (4 cr.) Mr. HOWE.
55. Nineteenth-Century Thought. I. Days and hours to be appointed. (2 cr.) Mr. SEMBOWER.
56. The Art of Poetry. II. Days and hours to be appointed. (3 cr.) Mr. SEMBOWER.
57. Literary Criticism. I. T.Th., at 9. (2 cr.) Mr. GREEVER.

58. Browning. II. Days and hours to be appointed. (2 cr.)
Mr. REYNOLDS, Mr. HALE.
59. Social Forces in English Literature. II. T.Th., at 9. (2 cr.)
Mr. HOWE.
60. Special Reading Course for Advanced Students. Credit and
hours to be arranged. Mr. HOWE, Mr. SEMBOWER, Mr.
STEPHENSON, Mr. REYNOLDS, Mr. GREEVER, Mr. HALE.
- Dante (Fine Arts 7). I, II. T.Th., at 11. (4 cr.)
Mr. BROOKS (Department of Fine Arts).
61. Problems in American Literature. II. Prerequisite, English 6.
Daily, at 9. (5 cr.) Mr. HOWE, Mr. SENOUR.
62. Milton. I, II. T.Th., at 11. (4 cr.) Mr. HALE.
63. The Poetry of the Sixteenth and Seventeenth Centuries. I, II.
Days and hours to be appointed. (4 cr.) Mr. SEMBOWER.
64. Advanced Course in Expression. I, II. Days and hours to be
appointed. Mr. FRAZIER.
65. Special Writing. II. T.Th., at 10. (2 cr.) Mr. SEMBOWER.

DEPARTMENT OF FINE ARTS

Professor BROOKS; Assistant Professor BURKE.

The following courses in the Department of Fine Arts may count as graduate work on the Master's degree:

16. The Plastic and Graphic Arts. A general introduction to architecture, sculpture, painting, and the minor arts. A first view of the history and meaning of these subjects, in their relations to civilization. T.Th., at 10. (2 cr.) Mr. BROOKS.
2. History of Architecture. Lectures, with collateral reading. (a) Greek and Roman. (b) Medieval and Renaissance. The second semester's work may be taken without the first half-year's work. I, II. Daily, at 9. (10 cr.) Mr. BROOKS.
3. Sculpture. (a) Greek and Roman. (b) Middle Ages and Renaissance. The second semester's work may be taken without the first half-year's work. I, II. M.F., at 10. (4 cr.) Mr. BROOKS.
7. Dante. Lectures on *The New Life* and *The Divine Comedy*, accompanied by the reading of both in English. I, II. T.Th., at 11. (4 cr.) Mr. BROOKS.
10. Art Criticism. A seminar course in which the art criticism of Reynolds, Ruskin, Pater, Tolstoi, Coleridge, Symonds, Browning, and Hazlitt is studied. I, II. Days and hours to be arranged. (4 cr.) Mr. BURKE.

DEPARTMENT OF GEOLOGY

Professors CUMINGS, LOGAN*; Assistant Professors MALOTT, VISHER.

The Department of Geology offers work leading to the A.M. and Ph.D. degrees. Opportunity is afforded for advanced work and investigation in stratigraphic geology and paleontology, and in economic and geographic geology.

The following courses are open to graduate students in the Department:

3. Economic Geology. I, II. M.W.F., at 8. (6 or 10 cr.) Mr. LOGAN.
4. Advanced Historical Geology. I, II. M.W.F., at hours to be appointed. (6 cr.) Mr. CUMINGS.
5. Systematic Paleontology. I, II. Days and credit to be arranged. Mr. CUMINGS.
7. Advanced Physiography. I. M.W.F., at 10. (3 cr.) Mr. MALOTT.
10. Research. I, II. Hours to be arranged. Mr. CUMINGS, Mr. LOGAN.
11. Seminary. I, II. M., at 4. (No credit.) Mr. CUMINGS, Mr. LOGAN, Mr. MALOTT, Mr. VISHER.
13. Advanced Field Work: Geological Survey. Days, hours, and credit to be arranged. Mr. LOGAN.

DEPARTMENT OF GERMAN

Professors Vos,† OSTHAUS.

The following courses are open to graduate students:

30. Studies in the Modern German Drama. I. M.W.F., at an hour to be appointed. (3 cr.) Mr. OSTHAUS.
28. Journal Club. I. Two hours weekly, at an hour to be appointed. (2 cr.) Mr. Vos.
22. German Seminary. II. Two hours weekly, at an hour to be appointed. (2 cr.) Mr. Vos.
27. Middle High German. I. Two hours weekly, at an hour to be appointed. (2 cr.) Mr. Vos.
29. History of the German Language. II. Two hours weekly, at an hour to be appointed. (2 cr.) Mr. Vos.
31. Research. I, II. Hours to be arranged. Mr. Vos.

* Promoted from associate professor January 17, 1919.

† Absent on leave from November, 1918, to serve as special assistant at the United States Legation at The Hague.

DEPARTMENT OF GREEK

Professor HOFFMAN; Associate Professor TILDEN.

The time that may be at present profitably devoted to graduate work in Greek is one year, leading to the A.M. degree. A thesis on some subject connected with the seminary work of the year is required for the degree.

All candidates for the A.M. degree with Greek as major subject are recommended to take at least ten hours in Latin, in advance of the Latin taken in the undergraduate study.

Courses 9, 12, and 13, or any part of these courses, are also open as minors to graduate students who have not already had as part of their undergraduate study the work which they take in these courses for graduate credit.

Following are the courses open to graduate students in the Department:

- 9. Lyric and Dramatic Poetry. I, II. Daily, at hours to be appointed. (10 cr.) Mr. TILDEN.
- 12. Philosophical Prose. I, II. T.Th., at 10. (4 cr.) Mr. HOFFMAN.
- [13. Historical and Rhetorical Prose. (a) Herodotus and Thucydides. (b) Demosthenes: *On the Crown*. I, II. M.W.F., at hours to be appointed. (4 cr.) Mr. TILDEN.] Omitted in 1919-20.
- 15A. Graduate Seminary: bk. Ades. I, II. Th., at hours to be appointed. (4 cr.) Mr. HOFFMAN.
- 15B. Graduate Seminary. Author studied to be selected. I. II. W., at hours to be appointed. (4 cr.) Mr. TILDEN.

DEPARTMENT OF HISTORY

Professor WOODBURN; Acting Professor HAWORTH; Assistant Professors KOHLMEIER, McDONALD,* ESAREY.

Candidates for the Ph.D. degree in history as major subject will be examined in each of the following fields: (1) ancient history, with emphasis at the option of the candidate on either Greek or Roman history; (2) medieval and modern history, with emphasis on either the medieval or the modern field; (3) English history, with emphasis either on the period before 1603 or after that date; and (4) American history, with chief emphasis either on the period before 1783, or after that date. The examination on the special field of the thesis will naturally be more searching than elsewhere.

Following are the courses open to graduate students in this Department:

* Absent on leave during academic year, 1918-19.

DEPARTMENT OF HOME ECONOMICS

Associate Professor WELLMAN; Assistant Professor SAGE; Instructor DAUM.

To carry graduate work in this Department, students must have completed the equivalent of twenty hours of work in this subject, or must make up the deficiency. The character of the advanced work may be varied according to the needs of the student and may deal with the scientific, the economic, the sociological, or the artistic aspects of the subject.

Following are the courses open to graduate students in the Department:

5. History of Costume and Costume Design. Prerequisite, Fine Arts 14. I. Daily, 10-12. (5 cr.) Miss SAGE.
14. Dietetics and Food Chemistry. Prerequisites, Home Economics 10 or 11, 12 (is prerequisite or parallel), Chemistry 3C. I, II. M.W.F., 10-12. (6 cr.) Miss WELLMAN.
16. Foods III. Prerequisite, Home Economics 14. I, II. T.Th., 8-10. (4 cr.) Miss DAUM.
25. Evolution of the Home. I, II. M.W.F., at 3. (6 cr.) Miss WELLMAN.
26. Economics of the Family. I, II. T.Th., at 11. (4 cr.) Miss DAUM.
27. Seminary. Hours and credit to be arranged. Miss WELLMAN.
28. Research. Special problems. Hours to be arranged. Miss DAUM.
29. Women and Children in the Textile Industries. I. Hours to be arranged. Miss SAGE.

DEPARTMENT OF JOURNALISM

Professor PIERCY; Assistant Professor WRIGHT.*

To students who have taken twenty hours of journalism as a minor with a major subject in either English, history, political science, philosophy, or economics, the Department offers one year of graduate work leading to the degree A.M. At least sixteen hours of work in journalism are required, the other fourteen hours to be arranged for in consultation with the head of the Department. It is contemplated that a thesis shall be an important part of the year's work, and shall receive five hours of credit out of the sixteen. The subject of the thesis will deal either with some phase or field of country journalism, or with some special work in city journalism, the specialization being related, if deemed best, to the student's major subject when an undergraduate.

2. Practical Newspaper Work (on the staff of *The Indiana Daily Student*). Editorial work exclusively. I, II. Daily, at hours to be arranged. (6 cr.) Mr. WRIGHT.
11. Advanced Course in Newspaper and Magazine Writing. I. T., 3-5. (2 cr.) Repeated II. Mr. PIERCY.
20. Seminary. I, II. Consultation hours to be arranged. Mr. PIERCY.
21. Administration and Policies. I, II. Days and hours to be arranged. (3 cr.) Mr. PIERCY.

* Absent on leave in the military service during fall and winter terms.

DEPARTMENT OF LATIN

Professor STOUT; Associate Professor BERRY.

Students who begin the graduate study of Latin after having completed an undergraduate course in the subject equivalent to that required of a major in the Department of Latin in Indiana University can complete the work for the Master's degree in one year. In special cases the work can all be done in summer sessions. The writing of a thesis is not required of all candidates for the Master's degree, but it is advised for those who expect to take additional work looking to the degree of Doctor of Philosophy. The work required for the Master's degree, while affording an introduction to the methods of investigation, is arranged primarily to give a wider and more thoro acquaintance with the language and literature, institutions and history of the Roman people. It is hoped that this will meet equally well the needs of those who wish to become better teachers of Latin in the high schools and the lower grades of the college course, and of those who desire a proper foundation for the more advanced study of Latin.

The purely graduate courses at present offered, and those to be added, will be given in a series such as to offer opportunity for a three years' course of graduate study. Candidates for the Ph.D. degree whose major subject of study is Latin are required to make Greek their principal minor subject. A wide range of choice will be allowed for the second minor subject, the only requirement being that such courses shall contribute in some definite way to the principal work of the candidate. Every library resource required for investigations assigned by the Department will be supplied if not at present in the library.

The Junior and Senior reading courses (Courses 33, 35, 41, 42) of the undergraduate work may be taken for graduate credit if certain additional work of graduate character assigned by the instructor be done in connection with them. The authors read in these courses are varied in different years, and thru a three years' period afford graduate students opportunity for a wide course of reading.

31. History of Latin Literature. I. T.Th., at 9. (2 cr.)
Miss BERRY.
33. Junior Reading Course. (a) Cicero's Tusculan Disputations, Book I, with collateral reading from other writers who reflect Roman thought concerning the destiny of the soul. (b) Plautus. Prerequisites, Latin 11, 14, 25, 26. I, II. M.W.F., at 9. (6 cr.) Miss BERRY.
- [35. Junior Reading Course. Alternates with Latin 33. (a) Prose of the Empire. (b) Juvenal: Selected Satires. I, II. M.W.F., at 9. (6 cr.) Miss BERRY.] Omitted 1919-20.
41. Senior Reading Course. An intensive study of one or more representative authors with collateral reading of other authors in the original and in translations, and written reports on the

collateral reading. (a) The classical historians of Rome. (b) Vergil's works. Prerequisite, twenty hours of credit in Latin. I, II. M.W.F., at 11. (6 cr.) Mr. STOUT.

- [42.] Senior Reading Course. Alternates with Latin 41, and is similar in aim. (a) Cicero: Orations. A number of orations will be read which are closely connected with the public life of the time or with the political fortunes of the author. (b) Readings from the Latin poets. Chiefly from those who are little read or not read at all in other parts of the Latin course. The selections cover all periods of Latin literature. Prerequisite, twenty hours of credit in Latin. I, II. M.W.F., at 11. (6 cr.) Mr. STOUT.]

Omitted in 1919-20.

- [51.] Latin Inscriptions. A course to teach the use of inscriptions for purposes of investigation. Summer session. (2½ cr.) Mr. STOUT.]

Omitted in 1919.

- [52.] The Topography and Monuments of Ancient Rome. Studied from ancient and medieval sources. I, II. M., 3-5. (4 cr.) Miss BERRY.]

Omitted in 1919-20.

- [53.] The Reign of Augustus Caesar. Studied from the sources. Summer session. Daily, at 9. (2½ cr.) Mr. STOUT. Omitted in 1919.

- [54.] The Military System of the Romans. Studied from the classical authors and Latin inscriptions. Summer session. (2½ cr.) Mr. STOUT.]

Omitted in 1919.

55. The Latin Romance: *Saturae* of Petronius, and *Metamorphoses* of Apuleius. A study is made of the origin, characteristics, and later developments of the Latin romance. I, II. M., 3-5. (4 cr.) Miss BERRY.

- [56.] Roman Provincial Administration. Studied from the classical authors and Latin inscriptions. Summer session. (2½ cr.) Mr. STOUT.]

Omitted in 1919.

57. Vergil: Works. A rapid reading of his works, with a special study of the epic and the pastoral as literary forms. Open to Seniors, graduate students, and qualified teachers. Summer session. Daily, at 7. (2½ cr.) Mr. STOUT.

61. Seminary: The Letters of Pliny the Younger. (a) An introduction to the science of text criticism, based on the text of the letters of Pliny. (b) A series of studies on topics connected with the language and the subject-matter of the letters. I, II. W., 3-5, and another hour to be arranged. (6 cr.) Mr. STOUT.

- [62. Seminary: Political Problems of the Romans. I, II. W., 3-5.
 (4 cr.) Mr. STOUT.]
 Omitted in 1919-20.
- [63. Seminary: The Roman Drama. Its development and technique, and its place in Roman life. About half of the extant dramas will be read in connection with the course. I, II. W., 3-5, and another hour to be arranged. (6 cr.) Mr. STOUT.]
 Omitted in 1919-20.

DEPARTMENT OF MATHEMATICS

Professors DAVISSON, ROTHROCK*; Associate Professor HANNA; Assistant Professor WILLIAMS†; Instructor DANTZIG‡.

The graduate courses at present offered by the Department of Mathematics lead to the A.M. and Ph.D. degrees.

A student wishing to secure the Doctor's degree with mathematics as major subject must, early in his graduate career, designate one of the following main divisions of mathematics as his specially chosen field: (1) arithmetic and algebra; (2) calculus and theory of functions; (3) geometry; (4) applied mathematics. In his specially chosen field, the candidate must present an acceptable thesis, showing an original treatment and giving evidence of original research, and be examined in three of the fields enumerated above.

The library of the Department, consisting of about 2,500 bound volumes, is located in Room 36, Wylie Hall. The library is open from 8 a.m. to 10 p.m., for use by students pursuing advanced work in mathematics.

The following courses are offered for properly qualified students. Days, hours, and credit will be arranged.

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| 21. Theory of Functions. | Mr. ROTHROCK. |
| 39. Theory of Invariants. | Mr. HANNA. |
| 30. Differential Geometry. | Mr. DAVISSON. |
| 44. Non-Euclidean Geometry. | Mr. DAVISSON. |
| [26. Projective Geometry.
Omitted in 1919-20.] | Mr. DAVISSON.] |
| 32. Theory of Numbers. | Mr. HANNA. |
| 45. Calculus of Variations. | Mr. ROTHROCK. |
| 51. Linear Differential Equations. | Mr. WILLIAMS. |
| 55. Theory of Transformations. | Mr. DANTZIG. |
| 20. Mathematical Reading and Research. Professors DAVISSON,
ROTHROCK; Associate Professor HANNA; Assistant Professor
WILLIAMS; Instructor DANTZIG. | |

* Absent on leave during the General Assembly, 1919.

† Absent on leave in the military service.

‡ Absent on leave from August 1, 1918. Resigned April 7, 1919.

DEPARTMENT OF PHILOSOPHY

President BRYAN; Professors BOOK, ELKIN; Acting Professor WILLIAMS*; Research Assistant PRESSEY.

The graduate courses offered by the Department are intended primarily for advanced students who wish to prepare themselves to become advertising or employment managers, social service workers, physicians, lawyers, teachers, supervisors or educational administrators, specialists in psychology and philosophy, or who wish to engage in educational research. The courses lead to the A.M. and Ph.D. degrees. Special problems will be arranged in psychology for those desiring to do advanced work in the field of technical and applied psychology.

The following courses are now offered and are open to graduate students in the Department:

- [35. Modern Idealism. I, II. T.Th., at 10. (4 cr.) Mr. ELKIN.]
Omitted in 1919-20.
- 36. Logic of Science. I. Two hours once a week, at a period to be appointed. (2 cr.) Mr. ELKIN.
- 5. Advanced Psychology. II. M.W.F., at hours to be appointed. (3 cr.) Mr. Book.
- [7a. Comparative Psychology. I. M.W.F., at 11. (3 cr.) Mr. Book.]
Omitted in 1919-20.
- 30. Seminary in Philosophy. I, II. Two hours a week, at hours to be appointed. Mr. ELKIN.
- 34. Psychological Seminary. I, II. Two hours a week, at hours to be appointed. Mr. Book.
- 8. Psychological Research. I, II. At hours to be arranged. Mr. Book.
- 40. Psychology of Learning and of Work. Given in conjunction with Education 17b. II. M.W.F., at 11. (3 cr.) Mr. Book.
- 33. Mental Development. Given in conjunction with Education 17a. I. M.W.F., at 11. (3 cr.) Mr. Book.
- 42. Mental Measurements. I, II. T.Th., at 9. (4 cr.) Mr. PRESSEY.
- 39. Metaphysics. I. T.Th., at 10. (2 cr.) Mr. ELKIN.
- 44. Business Psychology. I. M.W.F., at 10. (3 cr.) Mr. Book.
- 6. History of Philosophy. I, II. M.W.F., at 11. (6 cr.) Mr ELKIN.

* Resigned June 12, 1919.

DEPARTMENT OF PHYSICS

Professor FOLEY*; Associate Professors RAMSEY, DUTCHER.

The graduate courses offered by the Department of Physics lead to the A.M. and Ph.D. degrees.

The courses comprising the work of the first three years (thirty hours) in physics, also courses in photography, general laboratory work, the teaching of physics and physical manipulation, modern physics, and analytical mechanics (altogether forty-two hours) will be found listed in the bulletin of the College of Liberal Arts, or in the University Catalog. The following courses are open to graduate students, and to such undergraduates as may be prepared to take them:

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| 16. | Spectroscopy. I, II. T.Th., at 2. (4 cr.) | Mr. RAMSEY. |
| 18. | Applied Electricity and Dynamo-Electric Machinery. I. Days and hours to be arranged. (3 cr.) | Mr. RAMSEY. |
| 20. | Electric Waves. II. T.Th., at 2. (2 cr.) | Mr. DUTCHER. |
| 22. | The Conduction of Electricity thru Gases, Radio-activity, Electron Theory. II. Days and hours to be arranged. (3 cr.) | Mr. RAMSEY. |
| 29. | Differential Equations in Physics. I. M.W.F., at 8. (3 cr.) | Mr. RAMSEY. |
| [31. | Thermodynamics. I. T.Th., at 8. (2 cr.) | Mr. -----.] |
| | Omitted in 1918-19. | |
| 33. | Physical Optics. I, II. T.Th., at 9. (4 cr.) | Mr. DUTCHER. |
| [35. | Advanced Mathematical Electricity. I, II. T.Th., at 9. (4 cr.) | Mr. RAMSEY.] |
| | Omitted in 1918-19. | |
| 37. | Current Physical Literature. I, II. T.Th., at 10. (4 cr.) | Mr. RAMSEY. |
| 39. | Advanced Theoretical Physics. I, II. T.Th., at 11. (4 cr.) | Mr. RAMSEY. |
| 40. | Advanced Laboratory Methods and Research. I, II. Days and hours to be appointed. | Mr. FOLEY. |

DEPARTMENT OF PHYSIOLOGY

Professor MOENKHAUS; Assistant Professor EDMONDSON.

The following courses in the Department of Physiology are open to graduate students:

6. Advanced Physiology. I, II. Daily, at hours to be arranged. (Credit to be arranged.) Mr. MOENKHAUS, Mr. EDMONDSON.

* Waterman Research Professor, 1917-19.

10. Research. I, II. Daily, 8-4.
Mr. MOENKHAUS, Mr. EDMONDSON.
11. Seminary. I, II. M., at 4. (2 cr.)
Mr. MOENKHAUS, Mr. EDMONDSON.

DEPARTMENT OF POLITICAL SCIENCE

Professor HERSHEY*; Associate Professor BATES.

The following courses are open to graduate students in the Department of Political Science:

5. Municipal Government. I. M.W.F., at 11. (3 cr.) Mr. BATES.
- [7. Legislatures and Legislation. I. M.W.F., at 11. (3 cr.)
Mr. BATES.]
Omitted in 1919-20. Given in alternate years with Political
Science 8.
8. Public Administration. II. M.W.F., at 11. (3 cr.) Mr. BATES.
9. Social Politics. (a) The police power and labor legislation. (b)
The regulation of commerce. I, II. T.Th., at 11. (4 cr.)
Mr. BATES.
11. Political Theory. II. T.Th., at 10. (2 cr.) Mr. HERSHEY.
12. Problems of American Foreign Policy. II. M.W.F., at 10.
(3 cr.) Mr. HERSHEY.
13. International Relations. (a) Present-Day Europe. (b) The
Far East. I, II. M.W.F., at 11. (6 cr.) Mr. HERSHEY.
15. Public International Law. I, II. T.Th., at 1. (4 cr.)
Mr. HERSHEY.
16. Training for Public Service. I, II. Hours and credit by ar-
rangement. Mr. BATES.
21. Seminary in Government. I, II. Hours and credit by arrange-
ment. Mr. BATES.
22. Seminary in International Law and Diplomacy. I, II. Hours
and credit by arrangement. Mr. HERSHEY.

DEPARTMENT OF ROMANCE LANGUAGES

Professor HILLS; Associate Professors MORRIS, MOSE MILLER, HILL;
Assistant Professor SCHEIFLEY.

The following courses in the Department are open to graduate students. Besides the regular work of each course, additional collateral reading and special investigation may be required of graduate students.

* Absent on leave from August 1, 1918.

Courses in French

- [32. Contemporary French Novel. I, II. T.Th., at 11. (4 cr.) Mr. SCHEIFLEY.]
Omitted in 1919-20.
33. Contemporary French Drama. I, II. T.Th., at 11. (4 cr.) Mr. SCHEIFLEY.
- [10. French Literature of the Nineteenth Century: The Romantic Period. I, II. M.W.F., at 10. (6 cr.) Mr. MORRIS.]
Omitted in 1919-20.
27. French Literature of the Nineteenth Century: The Realistic Period. I, II. M.W.F., at 10. (6 cr.) Mr. MORRIS.
- [24. French Literature of the Eighteenth Century. I, II. T.Th., at an hour to be appointed. (4 cr.) Mr. -----]
Omitted in 1919-20.
- [7. French Literature of the Seventeenth Century. I, II. M.W.F., at 9. (6 cr.) Mr. HILLS.]
Omitted in 1919-20.
44. Comedies of Molière. I, II. T.Th., at 10. (4 cr.) Mr. HILLS.
45. French Literature of the Sixteenth Century: From Marot to Montaigne. I, II. T.Th., at an hour to be appointed. (4 cr.) Mr. SCHEIFLEY.
13. Old French. I, II. M.W.F., at an hour to be appointed. (6 cr.) Mr. MOSEMILLER.

Courses in Spanish

- [37. Modern Spanish Novel. I, II. M.W.F., at 8. (6 cr.) Mr. HILL.]
Omitted in 1919-20.
51. Modern Spanish Drama. I, II. M.W.F., at 8. (6 cr.) Mr. HILL.
38. Prose Fiction of the Seventeenth Century. With an especial study of Cervantes' *Don Quijote*. I, II. T.Th., at an hour to be appointed. (4 cr.) Mr. HILL.
- [52. Spanish Drama of the Sixteenth and Seventeenth Centuries. I, II. T.Th., at 10. (4 cr.) Mr. HILLS.]
Omitted in 1919-20.
53. Early Spanish: *Poem of the Cid*. Spanish literature to the fifteenth century. I, II. T.Th., at 10. (4 cr.) Mr. HILLS.

Courses in Italian

61. The Works of Dante. Particularly the *Vita Nuova* and the *Divina Commedia*. I, II. M.W.F., at 9. (6 cr.) Mr. MOSEMILLER.

DEPARTMENT OF SOCIAL SERVICE

Director HENRY.

The Department is prepared to offer opportunities in research leading to the A.M. and Ph.D. degrees. All of the work must be done in Indianapolis, but is subject otherwise to the rules which govern all graduate work.

Study may follow practical, statistical, or scientific lines; but must include a thesis embodying original investigation.

20. Research. Study of statistics and information gathered by the Department; or of conditions, in any part of the state, discovered in its work. I, II. Hours to be arranged. Miss HENRY.

DEPARTMENT OF ZOOLOGY

Professor EIGENMANN; Associate Professor PAYNE; Assistant Professor SCOTT; Instructor STARK.

All work in the Department during the summer is done at the Biological Station, Winona Lake, Indiana.

Following are the courses open to graduate students in the Department of Zoölogy:

30. Advanced Zoölogy. Individual work. I, II. Daily, 8-4.
Mr. EIGENMANN, Mr. PAYNE, Mr. SCOTT, Miss STARK.
32. Heredity and Evolution. Given in conjunction with Botany 21.
I. T.Th., at 11. (2 cr.)
Mr. PAYNE, Mr. WEATHERWAX (Department of Botany).
50. Seminary. I, II. Th., at 4. Mr. PAYNE.
60. Research. I, II.
Mr. EIGENMANN, Mr. PAYNE, Mr. SCOTT, Miss STARK.

SCHOOL OF EDUCATION

Professors SMITH,* BLACK, BOOK, LEE, CHILDS; Director MONROE.

Graduate work is offered in the School of Education, and special programs leading to the A.M. and Ph.D. degrees, with the Master's and Doctor's certificate in education, will be arranged on application.

A student whose undergraduate major was in the College of Liberal Arts will usually be given opportunity to do in one year the work for the A.M. degree in education. The work will include such undergraduate courses in education as may be necessary as a basis for the graduate work.

The courses of the summer sessions are so arranged that graduate students in the School of Education may complete the work for the Master's degree in summer sessions.

* Absent on leave from September, 1918, to September, 1919.

Graduate students in the School of Education may, by special arrangement, complete the work for two-thirds of a semester in the summer session of 1919 by remaining until August 22.

Following are the courses open to graduate students in the School:

6. History of Education. (a) Ancient and medieval periods. (b) Modern European and American systems. I, II. M.W.F., at 9. (6 cr.) Mr. CHILDS.
10. Philosophy of Education. I, II. M.W.F., at 10. (6 cr.) Mr. BLACK.
12. Advanced Course in High School Problems. (a) High school supervision. (b) The high school curriculum. Open to Seniors and graduate students with teaching experience or who have had Education 1 and 3 or their equivalent. Intended for principals and teachers of experience who are preparing for high school administration. I, II. T.Th., at 11. Mr. CHILDS.
15. School Administration. (a) General view of the field of school administration. (b) Intensive study of certain phases of school administration with special attention given to types of school surveys. I, II. M.W.F., at 9. (6 cr.) Mr. SMITH.
- 17a. Mental Development. Given in conjunction with Philosophy 33. I. M.W.F., at 11. (3 cr.) Mr. BOOK.
- 17b. Psychology of Learning and of Work. Given in conjunction with Philosophy 40. II. M.W.F., at 11. (3 cr.) Mr. BOOK.
9. Measurement of Intelligence. I, II. T.Th., at 9. (4 cr.) Mr. Book.
19. Rural Education. I, II. M.W.F., at 9. (6 cr.) Mr. BLACK.
20. The Theory and Administration of Vocational Education. I, II. M.W.F., at 8. (6 cr.) Mr. LEE.
21. Vocational Guidance. I, II. T.Th., at 8. (4 cr.) Mr. LEE.
22. Vocational Surveys. Designed for superintendents, principals, and directors of vocational education. I, II. M.W.F., at 9. (6 cr.) Mr. LEE.
23. Educational Measurements. II. T.Th., at 10. Mr. MONROE.
26. Methods in Educational Research. I. M.W.F. Hours to be arranged. (3 cr.) Mr. MONROE.
- 16B. Seminary in School Administration. I. M., at 4. Mr. SMITH.
- 16C. Seminary in Elementary Education. The topic for discussion will be The Pedagogy of the Bible. I. M., 4-6. Mr. BLACK.
- 16D. Seminary in Secondary Education. I. T., 7-9. Mr. CHILDS.
- 16F. Seminary in Vocational Education. I, II. Time to be arranged. Mr. LEE.

- 18B. Research: School Administration. I, II. Hours to be arranged.
Mr. SMITH.
- 18C. Research: Elementary Education. I, II. Hours to be arranged.
Mr. BLACK.
- 18D. Research: Secondary Education. I, II. Hours to be arranged.
Mr. CHILDS.
- 18E. Research: Educational Psychology. I, II. Hours to be ar-
ranged.
Mr. BOOK.
- 18F. Research: Vocational Education. I, II. Hours to be arranged.
Mr. LEE.
- 18G. Research: Educational Measurements. I, II. Hours to be ar-
ranged.
Mr. MONROE.

Students in Graduate School, 1918-19

*The following list includes all graduate students who were in attendance in the summer session of 1918, and the academic year of 1918-19. The different terms are indicated by "s", "1", "2", "3", respectively.

Aldred, Jacob William Huber (3)	<i>Chemistry</i>	Anderson.
A.B., Indiana University, 1917.		
Allman, Heyman B (s)	<i>Education</i>	Angola.
B.S., Tri-State College, —.		
Andrews, Helen Hunt (1)	<i>Social Service</i>	Indianapolis.
A.B., Butler College, 1917.		
Anderson, Flora Charlotte (1)	<i>Botany</i>	Crawfordsville.
A.B., Indiana University, 1914; A.M., 1917.		
Asbury, Eunice (1, 2, 3)	<i>English</i>	Coalmont.
A.B., Indiana University, 1918.		
Barringer, Graham Andrew (1, 2, 3) .	<i>History</i>	Bloomington.
A.B., Indiana University, 1918.		
Bawden, Frances Talmadge (1)	<i>Social Service</i>	Indianapolis.
A.B., Illinois College, 1911.		
Beals, Colonzo Chelice (s, 1, 2)	<i>Geology</i>	Russiaville.
A.B., Indiana University, 1917.		
Beauchamp, Vater (s)	<i>English</i>	Marysville.
A.B., Ohio Wesleyan University, 1914.		
Begeman, Hilda Lydia (1, 2, 3)	<i>Physics</i>	Sandborn.
A.B., Indiana University, 1918.		
Benckhart, Marjorie Nold (s)	<i>English</i>	Bloomington.
A.B., Indiana University, 1913.		
Blank, Irma Joyce (s)	<i>Home Economics</i>	Bridgeport.
A.B., Indiana University, 1916.		
Bolser, Claude Mathews (s)	<i>Journalism</i>	Newcastle.
A.B., Indiana University, 1914.		
Book, Hanna Mayme (s)	<i>Mathematics</i>	Bloomington.
A.B., Indiana University, 1905.		
Bourn, Frederick Edward (s)	<i>Education</i>	Stilesville.
A.B., Indiana University, 1911.		
Bridwell, (Mrs.) Nelle Naftzger (1) .	<i>English</i>	Bloomington.
A.B., Indiana University, 1910.		
Brothers, Chester Rodibaugh (2, 3) .	<i>Chemistry</i>	Goshen.
A.B., Indiana University, 1918.		
Burlingame, Olive Dorothy (s)	<i>Latin</i>	Moores Hill.
B.S., Moores Hill College, 1915.		
Cassidy, Elmina (s)	<i>Latin</i>	French Lick.
A.B., Indiana University, 1917.		
Chapman, Edgar Kincaid (2, 3)	<i>Physics</i>	Crawfordsville.
A.B., Oberlin College, 1903; M.S., Chicago University, 1910.		
Clark, Cordelia (s)	<i>Music</i>	Franklin.
M.B., Franklin College, 1910.		
Clark, Reeta (s)	<i>English</i>	Clarksville.
A.B., Hiram College, 1913.		
Clayton, Clarence R (s)	<i>Education</i>	Bloomington.
A.B., Indiana University, 1917.		
Cline, Charles Valentine (s)	<i>Education</i>	Leavenworth.
A.B., Indiana State Normal School, 1916.		

Cloud, John Hopper (2, 3)	<i>Physics</i>	Valparaiso.
A.B., Valparaiso University, 1896; A.M., Johns Hopkins University, 1918.		
Coleman, Margaret Faith (2)	<i>English</i>	Bloomington.
A.B., Indiana University, 1915; A.M., 1917.		
Cox, David Clark (3)	<i>Chemistry</i>	Madison.
A.B., Hanover College, 1916.		
Craven, Nellie Pearl (1)	<i>Latin</i>	Nineveh.
A.B., Indiana University, 1911.		
Croninger, Fred Howard (s)	<i>Mathematics</i>	Fort Wayne.
B.S., Heidelberg University (Tiffin, Ohio), —.		
Culline, Fag Winfield (2)	<i>History</i>	Greentown.
A.B., Indiana State Normal School, 1908.		
Culbertson, Kenneth Morton	<i>Latin</i>	Kokomo.
A.B., Indiana University, 1916.		
Dalzell, Wilbur Jennings (1, 2, 3)	<i>Physics</i>	Lawrence.
A.B., Indiana University, 1918.		
Daum, Kate (1)	<i>Home Economics</i>	Lawrence, Kan.
A.B., University of Kansas, 1913; A.M., 1916.		
Denny, Martha Livingston (s)	<i>Zoölogy</i>	Terre Haute.
A.B., Indiana University, 1917.		
Deane, Phena Ashley (1, 2, 3)	<i>Education</i>	Oaktown.
A.B., Indiana University, 1918.		
Deputy, Mary Lois (3)	<i>English</i>	Kansas City, Mo.
A.B., Indiana University, 1918.		
Dibell, Florence Ethel (s)	<i>Home Economics</i>	Wolcott.
A.B., Western College, 1917.		
Dodds, Lucille Margaret (s, 1)	<i>English</i>	Bloomington.
A.B., Indiana University, 1917.		
Driver, Charles S (s, 1, 2, 3)	<i>Zoölogy</i>	Weyer's Cave, Va.
A.B., Bridgewater College, 1916; A.M., Indiana University, 1918.		
Drybread, Dorothy (s)	<i>Home Economics</i>	Franklin.
A.B., Indiana University, 1917.		
Eddingfield, June (s)	<i>German</i>	New Ross.
A.B., Indiana University, 1906; A.M., 1913.		
Eggman, Carl Manson (3)	<i>Chemistry</i>	Pendleton.
A.B., Indiana University, 1918.		
Ellis, Thomas Finley (s)	<i>Economics</i>	Bloomington.
A.B., Valparaiso University, 1914; A.M., Indiana University, 1916.		
Esarey, (Mrs.) Laura Mills (1, 2)	<i>English</i>	Bloomington.
A.B., Indiana University, 1918.		
Evans, Chester Asahel (2, 3)	<i>Physics</i>	Bloomington.
A.B., Indiana University, 1904.		
Faulkner, (Miss) Kenneth (s)	<i>Chemistry</i>	Crawfordsville.
A.B., Indiana University, 1918.		
Fisher, Elisha Lemmel (s)	<i>Education</i>	Leesburg.
LL.B., Danville College, 1909; A.B., Indiana University, 1917.		
Folger, Thomas Harry (3)	<i>Zoölogy</i>	Columbus.
A.B., Indiana University, 1917.		
Gaddy, Euclid Taylor (s)	<i>Chemistry</i>	Bloomington.
A.B., Hanover College, 1916.		
Gardner, Robert Daniel (s)	<i>Education</i>	Angola.
A.B., Tri-State College, 1915.		
Garner, Vance Nellie (s)	<i>French</i>	Brownsburg.
A.B., Butler College, 1917.		
Gilmore, James Earl (3)	<i>Mathematics</i>	Monroe City.
A.B., Indiana State Normal, 1915.		
Graves, Merle Elizabeth (s)	<i>History</i>	Bloomington.
A.B., Indiana University, 1911.		
Gregory, Mabel (s)	<i>English</i>	Bloomington.
A.B., Indiana University, 1912.		
Haggard, Esther Margaret (s)	<i>Home Economics</i>	Indianapolis.
A.B., Drake University, 1917.		

Hansford, Hazel Irene (1, 3)	<i>Psychology</i>	Bloomington.
A.B., Indiana University, 1913.		
Hawk, Frances Alma (1)	<i>Social Service</i>	West Lafayette.
B.S., Purdue University, 1913.		
Hensley, Lulu Beecher (2, 3)	<i>Botany</i>	Bloomington.
A.B., Indiana University, 1917.		
Hepburn, Henrietta (1, 2, 3)	<i>English</i>	Bloomington.
A.B., Indiana University, 1916.		
Hepburn, (Mrs.) Luella Smith (s)	<i>Home Economics</i>	Bloomington.
A.B., Indiana University, 1917.		
Hess, John Ambrose (s)	<i>German</i>	Bloomington.
A.B., Kansas University, 1908; A.M., 1910.		
Hiatt, Bertha Sylvia (s, 3)	<i>History</i>	Summitville.
A.B., Indiana University, 1912.		
Hightower, Pleasant Roscoe (3)	<i>Education</i>	Bloomington.
A.B., Indiana Central College, 1914; A.M., Indiana University, 1917.		
Hoshaw, Nellie Gertrude (1)	<i>Latin</i>	Chalmers.
A.B., Indiana University, 1915.		
Howard, Inez Eulalia (s)	<i>Latin</i>	Lincoln.
A.B., Indiana University, 1914; A.M., 1917.		
Holdman, John Wesley (s)	<i>Chemistry</i>	South Bend.
A.B., Indiana University, 1914.		
Hudelson, Vista Margaret (2)	<i>History</i>	Bloomington.
A.B., Indiana University, 1917; A.M., 1918.		
Hughes, James Monroe (s)	<i>Education</i>	Sharpsville.
A.B., Indiana University, 1916.		
Hull, Louie Rice (2)	<i>Physics</i>	Bloomington.
A.B., Indiana University, 1914.		
Humke, Homer Louis (s)	<i>Education</i>	Noblesville.
A.B., Tri-State College, 1916.		
Iske, Louise Marie (s)	<i>Philosophy</i>	Indianapolis.
A.B., Indiana University, 1910.		
Johnson, Thomas Covington (1, 2)	<i>History</i>	Bloomington.
A.B., Indiana University, 1917.		
Johnston, Mary (s)	<i>Latin</i>	Bloomington.
A.B., Indiana University, 1900; A.M., 1902.		
Jordan, Jacob (s)	<i>Physics</i>	Lafayette.
A.B., Indiana University, 1914.		
Katterjohn, Cecil Cornelius (s)	<i>History</i>	Huntingburg.
A.B., Indiana University, 1918.		
Kelso, James Leon (3)	<i>Latin</i>	Bloomington.
A.B., Monmouth College, 1916.		
Kempf, Gerald Fidelis (2)	<i>Physiology</i>	Jasper.
A.B., Indiana University, 1916.		
King, Elsie (s)	<i>English</i>	Union City.
A.B., Indiana University, 1916; A.M., 1917.		
King, Florance Beeson (1)	<i>Home Economics</i>	Richmond.
B.S., University of Illinois, 1914.		
Leming, Bertha O (1)	<i>Sociology</i>	Goodland.
A.B., DePauw University, 1914.		
Lentz, Eli Gilbert (s)	<i>History</i>	Carbondale.
Ph.B., Ewing College, 1912.		
Legler, Louis Hugo (2)	<i>Economics</i>	Evansville.
A.B., Indiana University, 1916.		
Leser, (Mrs.) Hedwig Gruen (2, 3)	<i>Romance Languages</i>	Bloomington.
A.B., Indiana University, 1919.*		
Luck, Mellie Gladys (s)	<i>Romance Languages</i>	Bloomington.
A.B., Indiana University, 1917.		
Lyon, Florence (1, 2, 3)	<i>Romance Languages</i>	Delphi.
A.B., Indiana University, 1916.		
McCune, Virginia Throckmorton (s)	<i>Education</i>	Bloomington.
A.B., Butler College, 1917.		

*Work for A.B. completed at end of fall term. Will be granted in June, 1919.

McElroy, Martha Isabel (s)	<i>Latin</i>	Newberry.
A.B., Indiana University, 1918.		
McKown, Anna Gertrude (s)	<i>German</i>	Moores Hill.
B.S., Moores Hill College, 1916; A.B., Indiana University, 1917.		
Maddox, Margaret Louise (s)	<i>History</i>	Otterbein.
A.B., Oxford College for Women, 1916.		
Malott, Burton Joseph (s)	<i>Geology</i>	North Vernon.
A.B., Indiana University, 1915.		
Merrill, Madre (1, 2, 3)	<i>Romance Languages</i>	Bloomington.
A.B., Colorado College, 1917.		
Millikan, Ray Spencer (s)	<i>Education</i>	Lapel.
A.B., Indiana University, 1915.		
Morley, Everett Emerson (s)	<i>Education</i>	Bloomington.
A.B., Valparaiso University, 1915; A.M., Indiana University, 1918.		
Myers, Mabele Taca (s)	<i>Latin</i>	Noblesville.
A.B., DePauw University, 1911.		
Millis, Robert Jordan (s)	<i>Anatomy</i>	Hanover.
A.B., Hanover College, 1916.		
Murphy, Maurice Elgin (s)	<i>Economics</i>	Clayton.
A.B., Indiana University, 1913; A.M., University of Illinois, —.		
Needham, Elza (s)	<i>Science</i>	Cortez, Colo.
B.S., Valparaiso University, 1914.		
Nelson, Bertha Florence (s)	<i>Latin</i>	Fort Wayne.
A.B., Ohio Wesleyan University, 1905; A.M., 1908.		
Nelson, Dotson McGinnis (s)	<i>Science</i>	Clinton, Miss.
B.S., Mississippi College, 1907.		
Nie, Grover Martin (3)	<i>Physics</i>	Huntington.
A.B., Indiana University, 1911.		
Nowland, Edna Glover (1)	<i>English</i>	Indianapolis.
A.B., Indiana University, 1906.		
O'Brian, Kathleen (s)	<i>History</i>	Edwardsport.
A.B., Franklin College, 1916.		
Oehlkuck, Erna Irene (s)	<i>History</i>	Evansville.
A.B., Indiana University, 1914.		
Ong, Carrie (s)	<i>English</i>	Columbus.
A.B., Indiana University, 1912.		
Orvis, Mary Burchard (s)	<i>Journalism</i>	Madison, Wis.
A.B., University of Wisconsin, 1907.		
Painter, Carl Franklin (2, 3)	<i>History</i>	Middletown.
A.B., Indiana University, 1915.		
Painter, Floy Ruth (3)	<i>History</i>	Bloomington.
A.B., Knox College, 1915.		
Papish, Jacob (s)	<i>Chemistry</i>	Bloomington.
B.S., Valparaiso University, 1910; A.M., Indiana University, 1917.		
Phillips, (Mrs.) Honora Elder (1,2,3)	<i>Romance Languages</i>	Bloomington.
A.B., University of Colorado, 1910.		
Piercy, Josephine Ketcham (s,1,2,3)	<i>English</i>	Bloomington.
A.B., Indiana University, 1918.		
Pitkin, Edward Meyer (2)	<i>Anatomy</i>	Bloomington.
A.B., DePauw University, 1914.		
Pressey, (Mrs.) Luella Winifred (s, 1, 2, 3)	<i>Psychology</i>	Bloomington.
A.B., Vassar College, 1916.		
Ramsey, Earl E (s)	<i>Education</i>	Bloomington.
A.B., Indiana University, 1902; A.M., 1910.		
Ragsdale, Munier (s)	<i>Romance Languages</i>	Bloomington.
A.B., Indiana University, 1917.		
Ratliff, Ryland Fletcher (2, 3)	<i>Physics</i>	Danville.
A.B., Indiana University, 1900; A.M., 1904.		
Ray, Mary Estelle (s)	<i>Latin</i>	Bloomington.
A.B., Indiana University, 1911.		
Robertson, Mary Lucille (s)	<i>French</i>	Bloomington.
A.B., Indiana University, 1917.		

Rumble, Chester Arthur (s).....	<i>Education</i>	Oakland City.
B.S., Oakland City College, 1916.		
Schellschmidt, Olga (s).....	<i>English</i>	Indianapolis.
A.B., Indiana University, 1909.		
Shannon, Fred Albert (s).....	<i>History</i>	Reelsville.
A.B., Indiana State Normal School, 1914.		
Skinner, Charles Henry (s).....	<i>Physics</i>	Fairmount.
A.B., Indiana University, 1913; M.S., University of Iowa, 1916.		
Smith, Charles S (3).....	<i>Zoölogy</i>	Dillsboro.
A.B., Indiana University, 1917.		
Smith, Harriet Ruth (s).....	<i>German</i>	Bloomington.
A.B., Indiana University, 1915.		
Sparkman, Collye Fredward (1, 2, 3) <i>Education</i>		Bloomington.
B.Pd., Valparaiso University, 1908; M.A., Clark University, 1911; Ph.D., New York University, 1914.		
Stempel, (Mrs.) Myrtle Emmert (3) <i>Philology</i>		Bloomington.
A.B., Indiana University, 1902; A.M., 1915.		
Stephens, Mabel Elizabeth (s).....	<i>Latin</i>	Marion.
B.S., Marion Normal College, 1912; A.B., Indiana University, 1916.		
Stone, William Herschel (s).....	<i>Education</i>	Spencer.
A.B., Indiana University, 1918.		
Stuart, Leona Eleanor (s).....	<i>Home Economics</i>	Danville.
B.S., Central Normal College, 1915.		
Thomas, Joel Bert (1, 2, 3).....	<i>Education</i>	Danville.
A.B., Swarthmore College, 1914.		
Townsend, Roy Weston (s).....	<i>Education</i>	Warsaw.
A.B., Butler College, 1915.		
Tullis, George Henry (3).....	<i>Philosophy</i>	Bryant.
A.B., Indiana University, 1919.*		
Uphaus, Willard Edwin (2).....	<i>Education</i>	Bloomington.
A.B., Indiana University, 1917.		
Utterback, Arthur W (s).....	<i>Mathematics</i>	Winamac.
B.S., Valparaiso University, 1912.		
Valentine, Roy Herbert (s).....	<i>Education</i>	Newport.
A.B., Moores Hill College, 1911.		
Ward, Jesse Lynn (s).....	<i>Education</i>	Muncie.
A.B., Indiana University, 1910.		
Wellons, Blanche (s, 2).....	<i>English</i>	Bloomington.
A.B., Indiana University, 1914.		
Whinery, Smiley Massillion (s).....	<i>Education</i>	Warren.
A.B., Indiana University, 1916; A.M., 1917.		
White, Olive Rosalind (s).....	<i>English</i>	Sedalia.
A.B., Indiana University, 1918.		
Whitted, Estella Mary (s, 1, 2).....	<i>English</i>	Bloomington.
A.B., Indiana University, 1901.		
Wilkinson, Clarence Edwin (2, 3)....	<i>History</i>	Rockport.
A.B., Indiana University, 1918.		
Wright, Emerson Blaine (s).....	<i>Education</i>	Bloomington.
A.B., Indiana University, 1913.		
Zimmerman, Charles (s).....	<i>History</i>	North Vernon.
A.B., Indiana State Normal School, 1912; A.M., Indiana University, 1916.		

* Completed work for A.B. degree March 21, 1919, degree will be conferred at 1919 Commencement.

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